

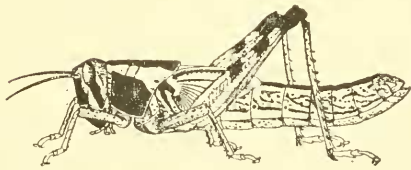
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THE  
SECOND REPORT  
OF THE  
MERCHANTS' LOCUST

INVESTIGATION COMMISSION  
OF  
BUENOS AIRES

BY  
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PUBLISHED IN ENGLISH AND SPANISH  
BY THE COMMISSION

1900  
HUNTER-WOODRUFF PRINTING CO.  
LINCOLN



## LETTER OF SUBMITTAL.

Gentlemen:—

Herewith is presented a second report on the labors of the writer while engaged in the study of the large Destructive Migratory Locust of the Argentine Republic and surrounding regions of South America. This second report was thought advisable because considerable additional data has been accumulated concerning that insect since the issuance early in 1898 of the former report. Besides, while studying the *Schistocerca paranensis*, much information has been gathered relative to various of the other locusts native to the country. Some of these latter have also been ascertained to likewise cause considerable damage to both wild and cultivated vegetation. It is for this reason that they too are treated at some length here. In fact, the greater portion of the present report is devoted to a fairly detailed synopsis of the entire locust family as represented in the Republic. The most important reason for this treatment of the other locusts, along with the one especially studied, is that the data which makes this latter paper possible has been accumulated by the Commission and should be given to the public for whose benefit these studies were undertaken in the first place.

The writer wishes here to thank the Commission as a whole, and the individual members separately, for the uniform courtesy with which he has been treated both while in Argentina and since returning to his labors in the United States. The Sub-commission also deserves special mention for the faithfulness it has exhibited in gathering and forwarding all of the data that has enabled the writer to make the work as complete as it is.

In the preparation of this report it has been possible for the writer to show many of the forms treated by having so good an artist as is Edna L. Hyatt at hand to make the drawings from the originals.

LAWRENCE BRUNER.



## REPORT.

The following condensed outline will indicate to the reader the chief topics connected with the locust problem in Argentina that have received the attention of the Commission:

- Description and name { of mature insect.  
of mature larva or *saltona*.  
of eggs and egg-mass.
- Distribution..... { in winter.  
during balance of year.
- Habits..... { of mature insect or *voladora*.  
of young or *saltona*.  
—bunching throughout life.
- Wintering.....—as *voladora* or imago.
- Egg-laying..... { Method of.  
Time of year ..... { Sept. Oct. and  
One *cartucho* or more? { Nov.(?)
- Flights { Spring—Away from wintering quarters } Taken together forming a sort of circuitous  
Summer—..... Irregular } journey(des.in Rept.I.)  
Fall—..... Toward wintering quarters }
- Natural enemies—
  - Animals..... {
    - Insects {
      - Attacking { Trox.  
eggs . . } Anthomyia.
      - Attacking { Beetles,  
*saltona* . } Wasps, etc.
      - Attacking { Diff. Parasitic  
*voladora* } Wasps.  
Robber flies.
    - Other invertebrates { Gordius.. } attack- { *Saltona*.  
Merimis. } ing.. } *Voladora*.
    - Vertebrates { Reptiles and Amphibians.  
Fishes.  
Birds.  
Mammals.
- Natural enemies—fungus.. { *Sporotri-*  
*chum*.  
*Empusa*.
- Climatic influences.
- Mechanical remedies . . {
  - Diverting flying mangas.
  - Driving, ditching, fencing to keep away.
  - Killing { Gathering eggs, crushing eggs, plowing, etc.  
Gathering *saltonas*, crushing by rollers, etc.  
Carcarana and other machines.  
Gathering *voladoras*,—machines, etc.

This outline is presented in the above compact form so as to show at a glance just what has been accomplished by the Commission working mostly independently from the very beginning. This independent plan of investigation was outlined purposely, so as to confirm what had been done by former investigators. The results as published in these reports will show how closely these tally in most cases with the published results of former and contemporary workers.

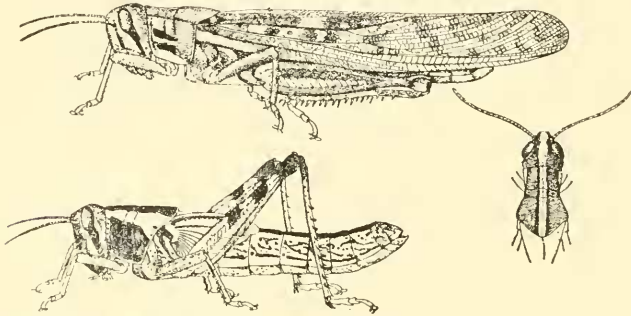


Fig. 1.—*Schistocerca paranensis*; mature male, saltona, and top of head and pronotum [original].

It will be seen therefore, that the seeming disregard for the results of previous investigators was not intended as a slight, nor had the writer or the Commission the remotest idea of ignoring what had already been done by others. That there should have been the least apparent feeling of ill will or jealousy exhibited either by myself or others, is deeply regretted by me.

Any changes in or additions to the former report will be given below.

DESCRIPTION AND NAME.—While engaged in the study of the life-history and habits of this insect at headquarters in Carcaraña, certain greenish saltonas were obtained that were without the characteristic black markings of the saltona of *paramensis*. Some of these were fed to maturity and developed into the closely allied *Schistocerca cancellata* Serv. which is normally a Chilean insect, but which also occurs on the east slope of the Andes and even in the interior to Para, Brazil. By referring to the illustrations numbered 1 and 2 the reader can see the differences between the two insects. This difference is especially discernible in the saltonas.

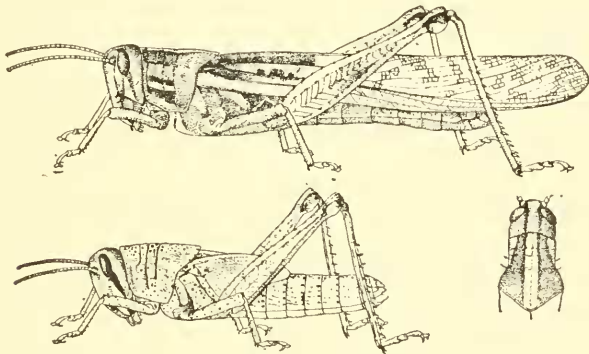


Fig. 2.—*Schistocerca cancellata*: mature female, saltona, and top of head and pronotum [original].

DISTRIBUTION.—The accumulation of data for the past two additional years does not materially change the published distribution of this Argentine locust. The maps, marked figures 3 and 4 show graphically the areas occupied during the winters of 1896, 1897 and 1898, and the warmer seasons of 1896-97, 1897-98 and 1898-99.

Mangas of large destructive locusts have been mentioned by different writers as occurring in Northern Ecuador, in portions of Brazil, Chili, Bolivia, etc. Perhaps these are distinct from *paramensis* in some instances at least, and cannot,

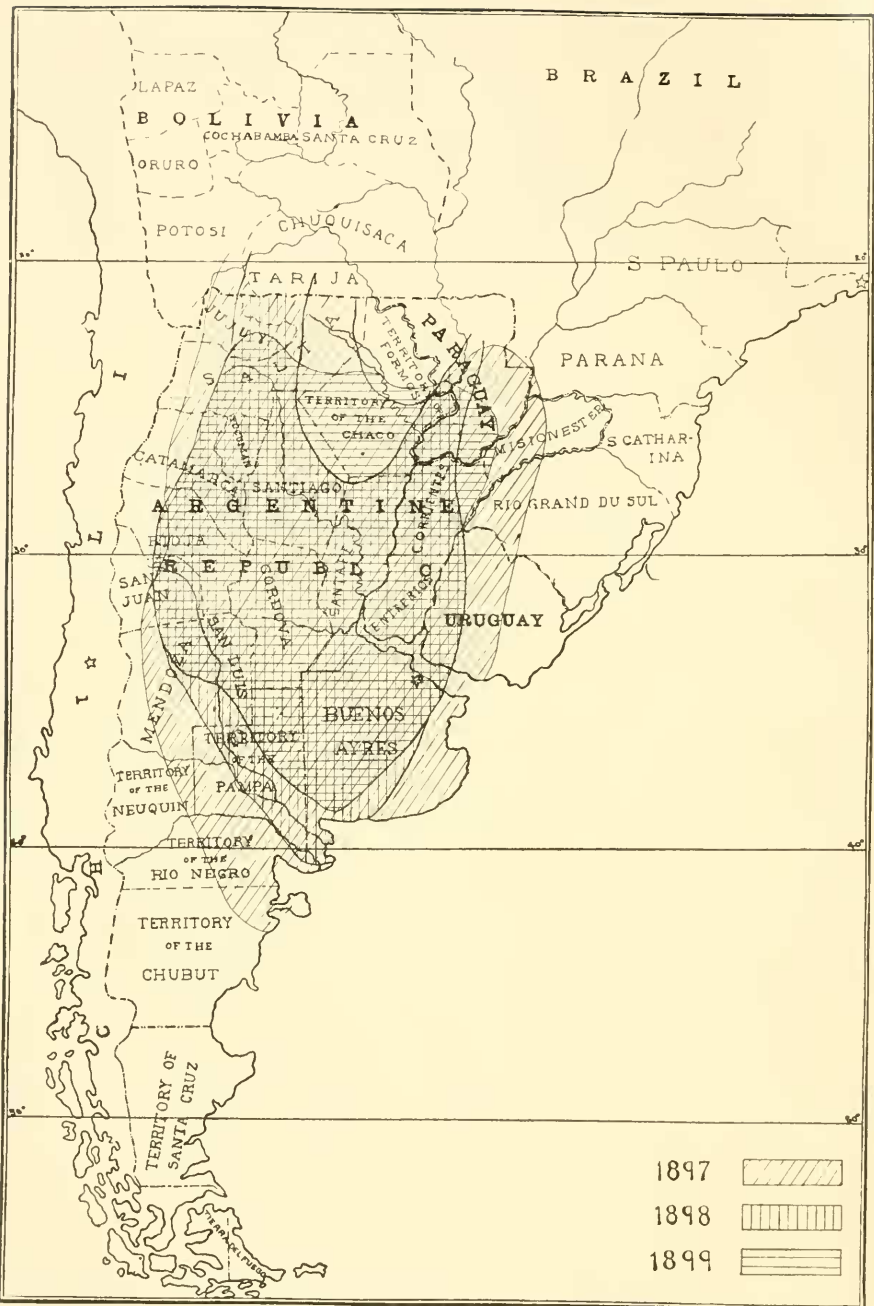


Fig. 4. —Map showing regions visited by *Schistoerca paranensis* during the spring, summer and fall months of 1896-'97, 1897-'98 and 1898-'99 as indicated by the data gathered by the Sub-commission.



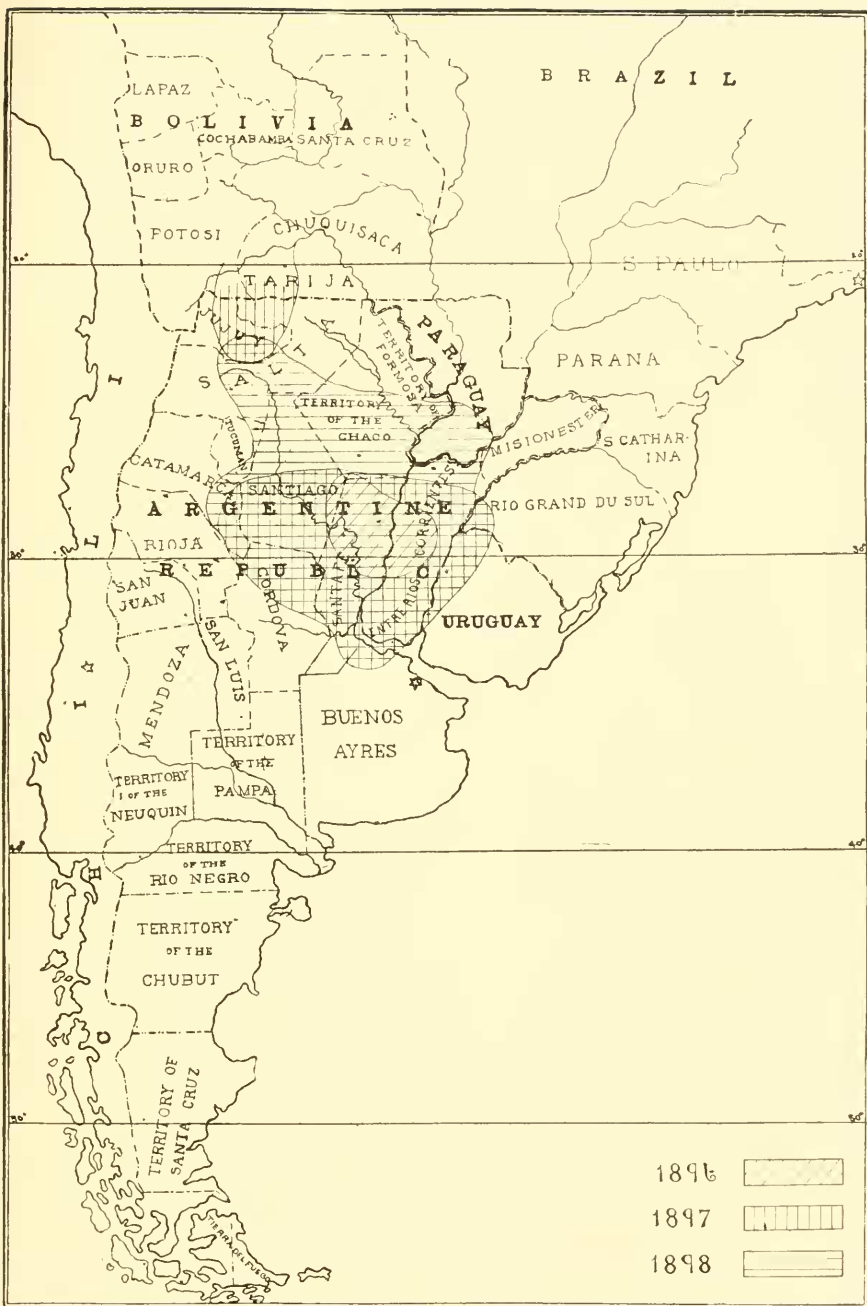


Fig. 3.—Map showing regions occupied by *Schistocerca paranensis* during the winter months of 1896, 1897 and 1898 as indicated by data gathered by the Sub-commission.

therefore, be taken into consideration when limiting the distribution of this insect. Especially is this liable to be true with reference to records for Ecuador and central Brazil.

HABITS.—Nothing further has been added to our knowledge concerning the habits, wintering or egg-laying. Though on this last mentioned topic considerable effort has been made to decide whether or not each female insect deposits but a single *cartucho*, or several *cartuchos* of eggs at intervals during the spring and summer months. Neither has the data thus far obtained enlightened us as to whether or not a partial second brood is reared in the northwest provinces late in the fall—during the months of April and May. By compiling the data accumulated on this point and covering a period of something over three years it is found that only 12 records occur of egg-laying during the month of August, 78 records for September, 326 records for October, 116 for November, 10 for December, 14 for January, 9 for February and 5 for March, while for April there occurs no definite record and but a single one for May. From these figures it can readily be seen that egg-laying occurs chiefly in spring, and for that matter mostly within 40 or 45 days with the month of October as the height of the season. This fact in itself would point quite conclusively that the rule must be but a single brood as well as a single *cartucho* of eggs per female. The irregularity noted later in the year could be readily accounted for by the supposition of retarded development of the eggs in many females that had become weakened either by disease, accident, or climatic influences during winter or early spring and later recovering sufficiently to migrate and develop their eggs.

The late layings in the northwest provinces are as yet hard to account for unless we are led to believe as Mr. Oliver C. James intimates in a letter. "From Rioja and Catamarca reliable reports of locusts depositing eggs in February and March were received. These were, doubtless, the progeny of the mangas which were hatched in these localities at a little later period last year."

FLIGHTS.—But little additional data of such a nature at least as to change what has been recorded under this head has accumulated during the intervening period. Mr. W. G. Davis, of the Meteorological Bureau, Cordoba, has submitted the following remarks:

“A few general considerations in connection with the flight of locusts which I think we may assume as facts:—1st. that in the southern flight in spring, the locust travels much faster than it does on the return flight in the autumn, or latter part of summer. 2nd. In the spring it generally flies during the warm hours of the day, when it takes advantage of the greater velocity of the wind; whereas, on its return to the North, it rises about sunset, travelling in the hours when there is little if any wind. 3rd. The direction of the flight in regard to the direction of the wind varies according to the velocity of the wind.

“Now, keeping these facts in view (provided they are such) let us look at the salient features of the wind condition, taking our Cordoba results a characteristic of those prevailing over the larger part of the Pampa region, and these will practically hold good for the region to the north and northwest from whence the locusts start in the Spring.

“We note that the maximum movements for both the north and south winds takes place in the months of August and September, so that at the season when the locust is leaving its hibernating grounds, it would be just as easy for him to make his way north as south, *i. e.*, the wind would help him as much on one course as on the other; thus, it would seem that it is purely instinct that leads the locust back to the region where it was produced, also that it shapes the course like a sailor both in flying before it and tacking and is in a hurry to reach his destination, making shorter stops on the journey and travelling in the hours when the wind will most assist its flight. I may be entirely wrong in the above supposition—I do not assert them as facts—but merely present them for your consideration.”

NATURAL ENEMIES.—BIRDS, INSECTS AND OTHER ANI-

MALS.—In the letter accompanying the data accumulated by the Sub-commission Mr. Oliver C. James, of Carcaraña, F. C. C. A., writes as follows concerning some of the natural enemies of the locust:

“There was also a marked increase in the number of birds, and the toads in all parts of this province particularly appeared in almost alarming numbers, so that the work of destruction carried on by these unobtrusive friends of the agriculturist was quite an appreciable factor in the whole country. The most noticeable feature in this increase of locust destroyers was the number of beetles (*Trox*—“*champi*”) to be found wherever the eggs were deposited. Almost as soon as the female locust began perforating the ground, certainly immediately after the eggs were laid, the *champi* put in an appearance, and as many as 20 to 30 of the beetles had been seen at work by close observers, in the earth about one ‘bed’ or cluter of ‘cartuchos.’”

Among the specimens of these champies that were collected by the writer or by the various correspondents of the Commission during his sojourn in Argentina, the three following species have been recognized; viz., *Trox suberosus* Fabr., *Trox aeger* Guer., and *Trox pillularius* Germ. These occur throughout the entire Pampa region, and their numbers are in the order named. They are a natural check to locust increase that appears to be uncontrollable by man, and there can be little doubt of their value in this direction.

Mr. James also adds that “From nearly every point reports indicate the presence of the long thread-like worm\* (*Mermis* or *Gordius*) and the short stocky grub (Tachina fly, —“Jachim”) in the body of the locust—both in the saltoma as well as in the voladora. The latest reports regarding the recently winged locust state that many are infested with the ‘guzano’ (the fly larva.)”

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\*Dr. H. B. Ward of the University of Nebraska, who is a recognized specialist on this group was to have prepared a paper for this report on the above mentioned worm, but was prevented from doing so on account of press of other duties.

In addition to the insect enemies of *paranensis* mentioned in former reports, it might be of interest to know that at least one species of the large bluish wasps with yellow wings of the genus *Pepsis* is known to attack it. Master William Thomas, a very careful observer of insects at Carcaraña, informed the writer that on more than one occasion he had seen these large wasps dash into a cluster of saltonas and sting one after the other, and then deliberately select one from among them and make off with it. Since there are several species of the genus *Pepsis* to be found at that locality the exact species was not determined.

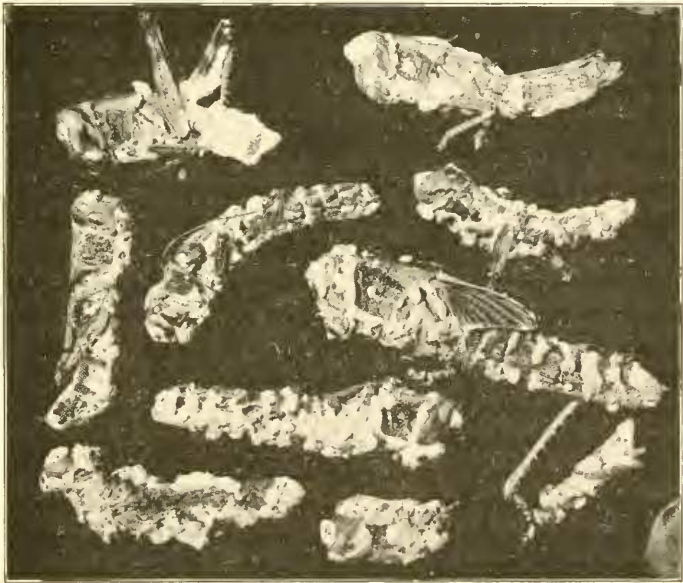


Fig. 5.—Dead saltonas of *Schistocerca paranensis* covered with the Carcarana Fungus.

FUNGUS DISEASES.—Nothing further of note seems to have developed concerning the effectiveness of the different insect attacking fungi as a means of combating this insect.

At least two such fungi have frequently been observed to attack it, and at times, with such persistence as to materially lessen the hordes of insects in certain localities. Up to the present time, however, no definite favorable reports have been received of its successful artificial distribution.

Mr. James writes that "Experiments made with the 'fungus Carcaraña' gave no definite results, although the season was favorable for the action of the fungus, having been humid almost continuously. There have been no mangas of locusts infesting the immediate locality of last year's development of the fungus disease, but between this place and San Geronimo the evidence of hundreds of dead locusts from a manga which was detained by stress of weather indicates that the fungus had developed there, all being of the characteristic bright red colour and more or less desiccated, notwithstanding the prevailing moist condition of the atmosphere."

This would indicate that the fungus is still active in the country, and that, under the proper conditions will take hold of and destroy locusts. The *Schistocerca paranensis* seems to be most subject to its attack, since but three other species were found killed by it during the writers careful search for others while in the country. These were *Zoniopoda tersata*, *Diponthus communis* and *Dichroplus elongatus* all of which are more or less abundant and inclined to become destructive at times. These insects are figured in the second portion of the present report.

Other specimens of the destructive locust that had evidently been killed by another of the fungous diseases were encountered by correspondents of the commission. Mr. James writes that "several specimens of locusts were sent to you by mail which had evidently died from the effects of the growth of an external fungus of a light ash colour, which almost completely enveloped the after part of the body. This had been observed as a cause of death during several years previous to your coming to the country, but none were reported here during the period of your investigations."

Just what this last mentioned fungus is has not been ascertained, since the specimens above referred to must have been lost.

The South African locust disease has been tried with but poor results, save as reported in connection with the destructive locust of that country.

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A BRIEF ACCOUNT OF THE GENERA AND SPECIES  
OF LOCUSTS OR GRASSHOPPERS OF ARGEN-  
TINA, TOGETHER WITH DESCRIP-  
TIONS OF NEW FORMS.

Incidentally while studying the migratory locust of Argentina, the writer made notes on a number of the various other species of locusts found in the Republic that came under his observation. He also had collections of these insects made in several portions of the country. Additional material was likewise obtained from Dr. Hugo Stempelmann of Rosario, Sante Fe, Federico Schulz, of Cordoba, and Masters Oliver and William Thomas of Carcaraña, F. C. C. A., thereby bringing together a sufficient number of forms to at least indicate, in a general way, what sort of a locust fauna occurs here. The results were so satisfactory that about a month before leaving Argentina for the United States the writer conceived the idea of preparing a paper on the 'locusts of Argentina' which should, so far as possible, contain a mention of all the described species found in the country, along with descriptions of any possible new forms that might be brought together for such a purpose. Efforts were therefore made to secure the material contained in both the National and La Plata museums for study so as to make this paper as nearly complete as possible. This last mentioned project failed, hence the species represented in these two collections are not recorded here, although several rare and perhaps additional new forms are known to be represented.

The present paper has been suggested chiefly on account of the number of other species of these insects that have heretofore shown a tendency to increase to such abnormal

numbers as to become local pests. Each of these will be described more or less fully in connection with its name in the proper place.

The two papers on Argentine Orthoptera by Dr. E. Giglio-Tos of Turin, Italy, have been of much value in forming a basis upon which to build. The drawings for the illustrations used here were made by Miss Edna L. Hyatt, Artist for several of the departments in the University of Nebraska.

The following table for the separation of the principal groups of subfamilies of locusts along with such as follow will aid the reader in obtaining the names of any of these insects mentioned here and that may come under his observation.

TABLE FOR DETERMINING THE SUB-FAMILIES OF ARGENTINA LOCUSTS.

- A. Claws of feet without cushion or arolium between them; pronotum extending over the abdomen; tegmina or front wings lobiform. **TETTIGINÆ.**
- AA. Claws with cushion or arolium present; not extending over the abdomen.
- b. Antennæ or feelers shorter than the front femora or thighs.
- c. Head short, compressed in front. **UMASTACINÆ.**
- cc. Head greatly elongated, body apterous or subapterous. **PROSCOPINÆ.**
- bb. Antennæ longer than the front femora.
- e. Posternum or breast between base of front pair of legs smooth, not provided with a tubercle, swelling, or spine
- d. Fastigium of the vertex but little declivous, meeting the face in a more or less well-defined angle, the face usually very oblique. Wings as a rule without a dusky band. **TRYXALINÆ.**
- dd. Fastigium of the vertex rounded at its point of junction with face, the latter vertical or nearly so. Wings when present usually with colored disk and well defined dusky band. **OEDIPODINÆ.**
- cc. Posternum or breast between base of front pair of legs laminately elevated in front, tuberculate or spined.
- d. Foveole of the vertex above, contiguous, forming the apex of the fastigium (Fig. 15). Rather clumsy insects, usually without, or with abbreviated wings, but occasionally with these appendages complete. **PYRGOMORPHINÆ.**
- dd. Foveole of the vertex lateral, never forming the apex of the vertex, often closed behind or entirely wanting. Posternum distinctly spined or tuberculate. Wings variously formed. **ACRIDINÆ.**

## SUB-FAMILY TETTIGINAE.

This sub-family of locusts is represented in Argentina by a comparatively small number of inconspicuous insects none of which ever become sufficiently numerous to cause any particular damage. They all live in rather damp localities along the margins of streams or in the vicinity of swamps, where they may be found in greater or lesser numbers upon the mud flats. These insects are known as "Grouse Locusts" and are represented in the Republic by less than a dozen species belonging to the following genera as indicated by specimens and records. They may be determined by the table for the separation of genera as given herewith.

## TABLE OF GENERA.

- A. Front thighs more or less carinated above; front margin of pronotum in middle not advanced upon the back of head.
- b. Body, even of the female, quite slender, the apex of pronotum greatly extended beyond the tip of hind femora.  
**NEPHELE** Bolivar.
- bb. Body in both sexes obese, the apex of pronotum not at all or but little extended beyond the tip of hind femora.  
**PARATETTIX** Bolivar.
- AA. Front thighs not compressed, rather broadly and distinctly grooved; front margin of pronotum in middle angulate and advanced upon the occiput. **TETTIGIDEA** Scudder.

## GENUS NEPHELE, BOLIVAR.

*Nephele gracilis* n. sp. Closely related to *N. turgida* Bol. but considerably smaller. Antennae with last or terminal joint the same color as the rest: the vertex as in that species. The pronotum extending nearly one-half of its length beyond the tip of the hind femora, its median carina laminately elevated in advance of the humeral angles. Color dark brownish fuscous. In some specimens more or less marked with the usual blotches of black and ochraceous on the disk between the humeral angles.

Length: of body, ♂, 6 mm, ♀, 8 mm; of pronotum, ♂, 12 mm, ♀, 13 mm; of hind femora, ♂, 2 mm, ♀, 5.25 mm.

I have seen specimens of this insect collected at Cordoba (F. Schulz), and others from Paraguay and Territory of Formosa, Argentina (Dr. H. Stempelmann).

## GENUS PARATETTIX, BOLIVAR.

## TABLE FOR SEPARATION OF SPECIES.

- A First and third joints of hind tarsi of equal length. Carinae of the femora entire. **peruvianus** Bol.
- AA. First joint of hind tarsi longer than the third. Carinae of the femora undulate.
- b. Carinae of anterior femora undulate. Pronotum generally shorter than tip of hind femora. Pronotum with carina on anterior portion rather high. **Borellii** Giglio-Tos.
- bb. Carinae of anterior femora leaf-like. Pronotum greatly surpassing tip of hind femora. **cnemidotus** Burm.

*P. peruvianus* Bol. This locust has been taken at San Lorenzo, in the province of Jujuy. (Giglio-Tos.)

*P. cnemidotus* Burm? Giglio-Tos also reports that a specimen from the same locality has been referred with doubt to this species.

*P. Borellii* Giglio-Tos. This insect has been collected in a number of localities, as San Lorenzo, Jujuy, Tucuman, Cruz del Eje, Cordoba, Carcaraña, Rosario, and Buenos Aires. It is evidently the most abundant species found in the Republic, and occurs in two forms as regards pronotum length. It can at once be recognized by the rather prominent tubercles on the outer face of the hind femora which, when observed from above, project considerably beyond the other portions of these legs.

Giglio-Tos, in his report on the Orthoptera of the "Viaggio del dott. Alfredo Borelli nella Repubblica Argentina e nel Paraguay", referred a single specimen of this insect with much doubt to *Paratettix toltecus* Sauss. (Bolletino dei Musei di Zoologia ed Anatomia comparata della R. Università di Torino, Vol. IX, No. 184, p. 5.) but in a later paper has described it under the above mentioned name.

## GENUS TETTIGIDEA, SCUDDER.

## TABLE FOR SEPARATION OF SPECIES

- A Body obese, the pronotum extending but little if any beyond tip of hind femora. **multicostata** Bol.
- AA. Body graceful, the pronotum greatly surpassing the tip of hind femora. **gracilis** Bruner.

*T. multcostata* Bol. This insect is quite common from Tucuman northward through the provinces of Salta and Jujuy. (Giglio-Tos.)

*Tettigidea gracilis* n. sp. A beautiful, very slender, dark brown species with long pronotum in which the supplemental carinae are continuous and nearly or quite as prominent as the middle and lateral ones. Vertex somewhat advanced in front of the eyes, the sides rounded, median carina prominent, considerably advanced in front of the sides where it unites with the frontal costa the sulcation of which begins on a level with the vertex. Face somewhat oblique. Last joints of palpi white and very conspicuous. Pronotum angulate in front and terminating in a rather prominent spine which projects forward upon the occiput beyond the middle of the eyes. Tegmina rather long, narrow, and provided with a whitish cicatrice near the apex which is roundly and obliquely truncated from below. Valves of the ovipositor unusually long, straight and slender, especially the lower pair which are dagger-like and almost without teeth.

Length: of body, 11 mm; of pronotum, 13.5 mm; of hind femora, 5.5 mm.

Only a single female specimen of this insect has been seen by the writer. It was captured on some bags of grain on the decks of a river steamer lying at anchor near the wharf of Corrientes.

#### SUB-FAMILY EUMASTACINAE.

Thus far this sub-family is not definitely known to exist by actual observation within the boundaries of the Republic; but, since several species have been taken in the closely adjoining portions of Paraguay and Bolivia, it may be taken for granted that at least one or two forms will occur in the northern portions, as for example the territories of Formosa and Chaco, and the provinces of Salta and Jujuy. These insects, like the representatives of the preceding sub-family, never become sufficiently numerous to cause damage to

cultivated vegetation, hence need not be taken into serious consideration in a treatise on destructive locusts. The following three or four species may be looked for in the territory mentioned above.

TABLE FOR DETERMINATION OF GENERA.

- A. Fastigium of the vertex very narrow, scarcely or not at all projecting in advance of the eyes. **EUMASTAX** Burr.  
 AA. Fastigium of the vertex wider and more or less projecting in advance of the eyes. **MASYNTES** Karsch.

GENUS EUMASTAX, BURR.

This generic name has recently been suggested by Malcolm Burr (Anales de la Sociedad Espanola de Historia Natural, Vol. XXVIII, 1899) in place of *Mastax* Perty, which had been used several years before in Coleoptera. This being the typical genus of the sub-family necessitated the changing of that name also.

TABLE FOR THE DETERMINATION OF THE SPECIES.

- A. Apex of the vertex above the eyes, when viewed from the side, not visible. Tegmina and wings fully developed. Posterior femora irregularly black spotted. **pardalina** Burr.  
 AA. Apex of the vertex above the eyes when viewed from the side plainly visible. Deflexed lobes of the pronotum with the anterior angle obtuse. **versicolor** Burr.

*Eumastax pardalina* Burr, Essai sur les Eumastacides, p. 51.

This insect was described as coming from Paraguay, and is liable to occur in northern Argentina.

*Eumastax versicolor* Burr, loc. cit. p. 54, also a Paraguayan species, and might likewise occur in the Territory of the Chaco.

GENUS MASYNTEs, KARSCH.

TABLE FOR THE DETERMINATION OF THE SPECIES.

- A. Tegmina lobiform, elliptical, the apex broadly rounded. Pronotum truncate behind, the middle minutely notched. **Borellii** Giglio-Tos.  
 AA. Tegmina and wings perfectly developed. Pronotum rounded behind, the middle not notched. **tigris** Burr.

*Masyntes Borellii* Giglio-Tos, Boll. Mus. Torino, Vol. XII. No. 302, p. 17, 1897.

This peculiar locust has been taken at San Pedro, Paraguay (Giglio-Tos) and is liable to occur in the Chaco country.

*Masynthes tigris* Burr, Essai sur les Eumastacides, p. 62.

Like the preceding species this is a Paraguayan locust to be looked for in the territories of Formosa and Chaco.

#### SUB-FAMILY PROSCOPINAE.

As indicated in the table for determining the sub-families of locusts it will be seen that the insects belonging to this sub-family are rather long, wingless, and resemble to a certain extent the different species of walking sticks, or stick insects. Thus far there have been reported from Argentina thirteen distinct species. They belong to the two genera that may be separated by the accompanying table.

#### TABLE OF GENERA.

- A. Pronotum cylindrical, not separated from the prosternum by longitudinal lines. Body comparatively heavy in the female; antennae nearly as long or a trifle longer than the vertex. **TETANORHYNCHUS** Brunner.
- AA. Pronotum more or less flattened from above, divided from the prosternum by a longitudinal line. Body long and slender even in the female; the vertex in both sexes advanced beyond the tip of the antennae. **CEPHALOCOËMA** Serville.

#### GENUS TETANORHYNCHUS, BRUNNER.

#### TABLE FOR THE SEPARATION OF THE SPECIES.

- A. Rostrum of the female distinctly shorter than the remainder of head, attenuated towards the apex. **humilis** Giglio-Tos.
- AA. Rostrum of the female distinctly longer than the remainder of head.
- b. Rostrum with the apex strongly clavate, posterior tibiae armed above with 14-22 spines on the inner and outer rows. **Borellii** Giglio-Tos.
- bb. Rostrum attenuate towards the apex. Posterior tibiae armed above with 13 spines on the inner and outer rows. **angustirostris** Brunner.

*T. humilis* Giglio-Tos. San Lorenzo, Province of Jujuy and northward. (Giglio-Tos.)

*T. Borellii* Giglio-Tos. Same localities as the preceding, and likewise Bolivia. (Giglio-Tos.)

*T. angustirostris* Brunner. San Jose, Republic of Argentina. (Brunner.)

## GENUS CEPHALOCOEMA, SERVILLE.

## TABLE FOR SEPARATION OF THE SPECIES.

- A. Rostrum of the vertex scarcely as long as or but little longer than balance of head. Pronotum punctulate or smooth. Tibiæ above on both sides with not more than sixteen spines.
- b. Rostrum of the vertex much shorter than the remainder of head. Abdomen five-ridged. **costulata** Burm.
- bb. Rostrum of the vertex distinctly shorter than or but little longer than remainder of head. Abdomen not five-ridged.
- c. More robust: rostrum pyramidal, acuminate, viewed from the front narrowly lamellate. Antennæ of female greatly surpassing the rostrum. **Borellii** Giglio-Tos.
- cc. More slender: rostrum with the sides parallel.
- d. Rostrum linear, obtuse, viewed from the front narrowly cruciform. Antennæ of female a little surpassing the rostrum. **Caizana** Giglio-Tos.
- dd. Rostrum quadrangular, obtuse, as long as (female) or longer (male) than the rest of head. **calamus** Burm.
- AA. Rostrum much (two or more times) longer than the remainder of head
- b. Pronotum longer than the head.
- c. Pronotum with the anterior margin not tuberculate.
- d. Rostrum less than twice the length of remainder of head, moderately dilated toward the apex. **obtusa** Giglio-Tos.
- dd. Rostrum fully twice as long as remainder of head, strongly dilated toward the apex. **magna** Giglio-Tos.
- cc. Pronotum with the anterior margin bituberculate. **gigantea** Giglio-Tos.
- bb. Pronotum shorter than the head.
- c. Rostrum less than four times as long as remainder of head.
- d. Rostrum a trifle more than twice as long as remainder of head; the anterior femora about two-thirds as long as pronotum. **teretiusecula** Brunner.
- dd. Rostrum three times as long as remainder of head; the anterior femora a trifle longer than the pronotum. **lancea** Burm.
- cc. Rostrum more than four times as long as remainder of head. **lineata** Brunner.



Fig. 6.—*Cephalocoema costulata*: female.

*C. costulata* Burm. This species which occurs over the greater part of the Republic north of the Rio Colorado is quite variable in color. (Collections of Stempelmann, Schulz, O. Thomas and others.)



*C. Borellii* Giglio-Tos. This insect was described as *Proserthria Borellii* by Giglio-Tos (Boll. Mus. Torino, Vol. IX, No. 184, p. 4, 1894.) It probably occurs in the region embraced in the territory of Formosa.

*C. Caizana* Giglio-Tos. Caiza, in Bolivian Chaco, adjoining the northern portion of Argentina. (Giglio-Tos.)

*C. calamus* Burm. Northern Argentina. (Burmeister.)

*C. obtusa* Giglio-Tos. Province of Jujuy. (Giglio-Tos.)

*C. magna* Giglio-Tos. Province of Jujuy. (Giglio-Tos.)

*C. gigantea* Giglio-Tos. Province of Jujuy. (Giglio-Tos.)

*C. teretiuscula* Brunner. Resistencia, Chaco. (Giglio-Tos.)

*C. lancea* Burm. Entre Rios (Burmeister): Cordoba. (Collection F. Schulz and H. Stempelmann.)

*C. lineata* Brunn. Mendoza in La Plata (Dohrn's Collection.)

#### SUB-FAMILY TRYXALINAE.

The insects belonging to this sub-family are much more numerous than are those of any of the preceding sub-families: and, in some instances, become sufficiently numerous to warrant their being classed as destructive. In Argentina we have so far found species which belong to the genera named in the following table for their separation. Several of these genera are herewith described for the first time, while a few of the species also are made known to science in this paper, they not having been recorded or described by any former writers.

#### TABLE FOR SEPARATING THE GENERA.

- A. Foveolæ of vertex below or absent. Face usually very oblique.
  - b. Antennæ with the joints depressed, more or less ensiform.
  - c. Wings of male more or less broadly fenestrate.
    - d. Sides of the fastigium strongly rounded, the apex not acuminate. Tegmina acuminate or decidedly obliquely truncate. Posterior femora with the apical angles horizontally produced, acuminate.
    - e. Head conical; face moderately oblique. Foveolæ of the vertex indistinct, triangular.
    - f. Vertex longer than the eyes. Tegmina of male broader than the length of the pronotum. Wings of male very broadly fenestrate. **HYALOPTERYX** (Charp.

- ff. Vertex shorter than the eyes. Tegmina of male narrower than the length of pronotum. Wings of male less broadly fenestrate.
- g. Tegmina obliquely truncate at apex; wings hyaline and more or less infuscated. Pronotum with the lateral carinae continuous uninterrupted.
- h. Larger, general color green.

**METALEPTEA** Brunner.

- hh. Smaller, general color testaceous or ferruginous.

**ORPHULA** Stal.

- gg. Tegmina acuminate, wings tinted with dilute red. Pronotum with the lateral carinae interrupted.

**EUTRYXALIS** Bruner.

- dd. Sides of the fastigium straight or but gently rounded, the apex more or less acuminate. Tegmina broadly rounded or somewhat truncate. Posterior femora with their angles roundly deflexed.

- e. Fastigium of the vertex above depressed; without a longitudinal carina.
- f. Lateral carinae of pronotum more or less converging near the middle. The sides of pronotum compressed; tegmina and wings fully developed.

- g. Wings tinted with yellowish-brown; the tegmina rather broad.

**PARORPHULA** Bruner.

- gg. Wings transparent, sometimes more or less infuscated; tegmina narrower.

**ORPHULELLA** Giglio-Tos.

- ff. Lateral carinae of pronotum not converging near the middle. The sides of pronotum not compressed. Tegmina and wings usually more or less abbreviated.

**DICHROMORPHA** Morse.

- ee. Fastigium of the vertex above rounded, provided with a longitudinal carina.

- f. Wings with the anterior ulnar vein branched at base. Antennae long, clavate in the male. Wings red and black.

**TOXOPTERUS** Bolivar.

- ff. Wings with the anterior ulnar vein not branched at base. Antennae long, not clavate in male. Wings hyaline, more or less tinted with carmine at base.

**FENESTRA** Brunner.

- cc. Wings of male not fenestrate, the radial veins not incrassate and constricted on apical third. Pronotum with lateral carinae gently diverging posteriorly; and with a pair of supplemental carinae on disk. Antennae sub-ensiform. Front strongly oblique.

**SINIPTA** Stal.

- bb. Antennae filiform. Lateral carinae of pronotum parallel; supplemental carinae absent.

**AMBLYTROPIDIA** Stal.

- AA. Foveolae of vertex visible from above, always present. Face usually more nearly vertical than in the alternate category.

- b. Inner apical spurs of hind tibiae subequal in length. Antennae at least of male nearly or quite as long as hind femora.

- c. Wings colored. Basal joints of antennae depressed. Lateral carinae of pronotum converging toward the middle. Tegmina without trace of intercalary vein.

**DICHRORHETTIX** Bruner.

- cc. Wings transparent. Basal joints of antennæ not depressed. Lateral carinæ of pronotum nearly parallel. Tegmina with the intercalary vein more or less plainly developed. **STAURORHECTUS** Giglio-Tos.
- bb. Inner apical spurs very unequal in length. Antennæ of neither sex anywhere near as long as hind femora.
- c. Lateral foveolæ of the vertex well developed, once and a half to twice as long as broad. The lateral lobes of pronotum furnished with a rather broad, smooth raised, light-colored carina a little below the middle. **STRAPLEURA** Scudder.
- cc. Lateral foveolæ of vertex obscure, linear. Lateral lobes of pronotum without raised line or carina.
- d. Larger. Lateral carinæ of pronotum more or less interrupted between anterior and posterior sulci; diverging strongly anteriorly and posteriorly. **PLECTROTETTIX** McNeill.
- dd. Smaller. Lateral carinæ of pronotum but little or not at all interrupted; diverging but little. **EUPLECTROTETTIX** Bruner.

## GENUS HYALOPTERIX, CHARP.

### TABLE FOR SEPARATION OF THE SPECIES.

- A. Size large. Pronotum behind distinctly angulate, lateral carinæ continuous, straight. Wings with the posterior field red, in male the anterior field broadly dilated, the anterior margin distinctly rounded, the fenestrate area very broad. Tegmina of male broader than the length of pronotum. Last ventral segment of male abdomen long. **rufipennis** Charp.
- AA. Size small. Pronotum behind rounded to roundly angulated, lateral carinæ not continuous, being more distant on posterior than anterior lobe. Wings entirely subhyaline, the fenestrate area of male less wide. Tegmina of male narrower than length of pronotum. Last ventral segment short. **gracilis** Giglio-Tos.

*H. rufipennis* Charp. Perhaps this insect occurs in northern Argentina, although not definitely recorded from the immediately adjoining regions.

*H. gracilis* Giglio-Tos. San Lorezo, Jujuy (Giglio-Tos.)

## GENUS METALEPTEA, BRUNNER.

*M. brevicornis* Linn. This insect is found throughout the Republic north of the Rio Colorado, especially along the eastern border. (Schulz, Stempelmann, Thomas, etc.) Jujuy. (Giglio-Tos.)

## GENUS ORPHULA, STAL.

*O. pagana* Stal. Formosa, Chaco and Asuncion. (Brunner, Schulz.)

## GENUS EUTRYXALIS, N. G.

This generic name is suggested for the insect described by Giglio-Tos as *Metaleptea minor* and another one which is described herewith as *Eutryxalis strigata*. The members of this genus differ chiefly from those of *Metaleptea* by the characters mentioned in the table for the separation of the genera of the sub-family Trvxalinae.

*Eu. minor* Giglio-Tos. Bolletino dei Musei di Zoologia ed Anatomia comparata della R. Università di Torino, Vol. XII, No. 302, p. 23. (Collections of Schulz, Stempelmann and Thomas.) Common throughout the provinces north of the Rio Colorado, and quite variable in color.

*Eu. strigata*, n. sp.

Several specimens of an insect that seems to be distinct from the *E. minor* G.-Tos were taken at Carcaraña. These specimens are of about the same size as that species but differ in having the body somewhat slenderer; and the legs and body much more sharply carinated, also in being alternately dark brown and light testaceous striped and streaked, these streaks extending from the tip of the vertex to the apices of the tegmina, femora, and abdomen. On the occiput is a central, narrow line of testaceous bordered on either side by one of dusky, followed by a light, again bordered by dark, almost black, then light, after which follows a dusky band, then a light one which is continuous upon the lateral carinae of pronotum and passes to one of the principal veins of tegmina. Below this is a dusky stripe followed by a light one, then by a dusky, again by a light and dusky, then the lower margin of cheek and lateral lobe of pronotum broadly light testaceous. In like manner the face with all of the carinae are light, the interspaces dark; the carinae of legs light, the interspaces dark; tegmina with all the principal veins bordered narrowly by dark, with the interspaces or fields yellow.

Length: Female, body 27mm; pronotum 4.75 mm; tegmina 21 mm; hind femora 14 mm; antennae 7mm.

## GENUS PARORPHULA, N. G.

Body more or less compressed, antennae in both sexes with the basal joints flattened, subensiform in the female, a little longer than (male) or about as long as (female) head and thorax combined; the vertex between the eyes about as broad as the smaller diameter of the former, horizontal, with shallow depression surrounded by rounded walls; angle of fastigium a little less than a right angle; lateral foveolae not visible from above, elongate triangular; frontal costa quite prominent between the antennae, rather broader than diameter of basal joint, sulcate throughout; pronotum with the median carina heavy, subcristate; the lateral carinae well defined throughout, the three cut by last transverse sulcus a little in advance of the middle, posterior margin angulate; tegmina and wings fully developed, the apex rounded; hind femora moderately stout, in the male surpassing, in the female about reaching, the apex of abdomen; hind tibiae with from 11 to 13 spines in outer row.

In general appearance the insects of this genus resemble some of the larger forms belonging to the genus *Orphulella* in North America, but on account of their subensiform antennae, infuscated wings, and well developed median carina of the pronotum, they approach more closely to the genus *Orphula*.

## TABLE FOR SEPARATION OF SPECIES.

- A. General color more or less green. **graminea** Bruner.  
 AA. General color testaceous and brown.  
   b. The upper portion of pronotum and tegmina pale. **pallidinota** Bruner.  
   bb. Entire body more or less varied with pale and dark streaks. **Strigata** Bruner.

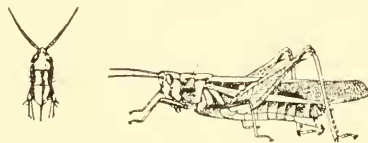


Fig. 7.—*Parorophula graminea*, female, and top of head and pronotum.

*P. Graminea* n. sp.

General color of head, pronotum, sides of thorax, and tegmina grass green varied with brown and testaceous; pronotum with the median carina suberistate, especially in front: lateral carinae nearly parallel to the transverse sulcus behind which they diverge greatly to the posterior lateral angles: last transverse incision a little in advance of the middle, front edge straight, hind edge more than a right angle. Tegmina and wings reaching beyond the abdomen and tip of hind femora in both sexes, with the costal and dorsal edges in male grass green: discal field more or less dusky, provided with a row of rather large quadrate dark brown spots. Posterior femora with indications of dusky bands. Sides of pronotum and metapleurae provided with diagonal testaceous bands: hind tibiae testaceous, inclining to reddish, more or less sprinkled with brownish markings.

Length: of body, ♂ 17 mm: ♀ 25 mm: of pronotum, ♂ 3.5 mm, ♀ 4.75 mm: of tegmina, ♂ 15 to 17 mm, ♀ 22 to 24 mm: of hind femora, ♂ 11 mm, ♀ 15 mm: of antennae, ♂ and ♀ 7.5 to 8 mm.

This insect occurs in rather large numbers on the open camp throughout the provinces of Buenos Aires, Sante Fe, and Cordoba. (From the collections of F. Schulz, H. Stempele, and O. Thomas.)

*P. pallidinota* n. sp.

Very similar to the preceding in size and form, but differing from that species by being dull wood-brown and in having a pale disk of pronotum and dorsal edges of tegmina. Head smaller with less advanced vertex than in the preceding species. The lateral foveolae well marked,—sublinear. Median carina of pronotum less developed: the lateral carinae converging gently towards the transverse incision from which point they expand rapidly posteriorly as in the preceding species. Lateral lobes of pronotum with a rather well defined black band extending from the front edge backwards to the transverse sulcus where it passes, in part, to

the disk above. The discal field with only a faint indication of dusky spots. Posterior femora without indications of dusky band: the posterior tibiae testaceous with a purplish tinge towards base. Tegmina considerably narrower than in the preceding species but little surpassing the tips of the abdomen.

Length: of body, female 24 mm: pronotum 4-4.5 mm: tegmina 19 mm: hind femora 14 mm: antennae 7 mm.

Carcaraña F. C. C. A. on rather low alkali grounds, comparatively rare.

*P. Strigata* n. sp.

A much slenderer form than either of the two preceding, with the fastigium of the vertex forming a right angle, and having the lateral carinae of pronotum parallel to transverse incision, from this point to back edge of pronotum somewhat bowed, but diverging as in the other species. Tegmina and wings just reaching the posterior extremity of hind femora which slightly surpass the tip of abdomen. The characteristic features of this species are the numerous dark and light stripes and bands which adorn the body and wings. General color of insect dull testaceous: occiput with two slender dark lines arising near the middle of fastigium and directed backwards upon the head almost to front edge of pronotum, enclosing a stripe of nearly equal width to fastigium of general color of body: a rather broad stripe from back edge of eyes to front of pronotum along the upper edges of lateral sides of which it continues across this to discal field of tegmina. This stripe also crosses lower half of eyes to face and there separates forming two rather large black bands, giving the face a very peculiar appearance. Below this on the face, cheeks, and sides of pronotum is another rather broader testaceous band which continues as the light costal edge of tegmina. Again below this is an indication of dusky bands relieved by smaller stripes of a light color. The femora and tibiae of all the legs are dusky and have the

prominent carinae testaceous; upper portion of abdomen testaceous with dusky markings; abdomen on the sides dusky, venter yellow.

Length: of body, female 22 mm; of pronotum 4 mm; of tegmina 17 mm; of hind femora 13.5 mm; of antennae 7 mm.

This insect also occurs upon low alkali grounds in the vicinity of Carcaraña F. C. C. A. like the preceding. It is much rarer than *graminea*. (Anton Kurriger.)

### GENUS ORPHULELLA, GIGLIO-TOS.

The insects belonging to this genus are all rather small and very variable in color—so much so, that without a very full series of specimens to study the student cannot construct a table that will definitely separate them. There seem to be at least three well marked forms found within the territory covered by the present paper. They may be determined by the following

#### TABLE FOR SEPARATING THE SPECIES.

- A. General color griseous. Tegmina sprinkled with black dots.
  - b. Size larger. Lateral carinae of pronotum entire, strongly diverging posteriorly. **punctata** De Geer.
  - bb. Size smaller. Lateral carinae of pronotum somewhat interrupted near middle, less strongly diverging posteriorly. **intricata** Stal.
- AA. General color green. Discal field of tegmina varied with black. **elegans** Giglio-Tos.

*O. punctata* DeGeer. Resistencia, Chaco. (Giglio-Tos.)

*O. intricata* Stal. Buenos Aires (Giglio-Tos): Cordoba (Schulz) and other localities.

*O. elegans* Giglio-Tos. Resistencia, Chaco (Giglio-Tos): Cordoba (Schulz); Tucuman (Bruner.)

### GENUS DICHROMORPHA, MORSE.

*D. australis* n. sp.

The collections of Masters Oliver and William Thomas at Carcaraña contain several specimens of an insect that without doubt can be referred to the genus *Dichromorpha*. These specimens certainly are not specifically identical with the



*Dichromorpha viridis* found so abundantly throughout the United States and portions of Mexico. The following description is therefore appended:

Antennae rather short with the joints somewhat depressed basally: fastigium of the vertex projecting in advance of the eyes about half their lesser diameter: the frontal costa gently sulcate from between antennae to clypeus: lateral carinae of face not prominent, sinuate, and diverging to corners of face: eyes small, rounded behind, nearly straight in front and somewhat acuminate above: foveolae of vertex but gently sulcate. Pronotum very gently compressed on the sides, the lateral lobes slightly bulging: the three carinae distinct, the lateral ones gently diverging from anterior margin to the posterior: last transverse incision a little behind the middle, posterior edge partly angulate: tegmina and wings varying in length from two-thirds that of the abdomen to considerably surpassing it, their apex rounded. Posterior femora moderately heavy, comparatively short, and but little surpassing the tip of abdomen. General color either green or dull wood brown, with indications of a slight dusky band on sides of head, back of eyes and upper portion of lateral lobes of pronotum: also a slight blackish line on upper edge of knees of hind femora. There is also an indication of dusky markings at the sides of basal segments of abdomen and meso- and metathorax.

Length: of body (female) 20 mm; antennae 5mm; of pronotum 4 mm; of tegmina 10 to 15 mm: of posterior femora 10.5 to 11 mm.

This insect is rather rare in the vicinity of Carcaraña and Roldan where it occurs along railroad tracks and in the vicinity of cultivated or disturbed ground in a similar manner to that of our North American form. Specimens were also seen from Rosario, Santa Fe.

Dr. Giglio-Tos in his report on the Orthoptera of the Bolivian Chaco and of the Republic of Argentina mentions having taken specimens of *D. viridis* Scudd. at San Lorenzo in the province of Jujuy. Whether or not they were of the same species as the present I cannot say.

## GENUS TOXOPTERUS, BOLIVAR.

If this genus of the Tryxalinae occurs at all within the confines of Argentina it will be near the Bolivian frontier. It has been included in the table of genera on account of the similarity in color between *Toxopterus miniatus* Bolivar and a new form from several localities in Cordoba and Santa Fe.

## GENUS FENESTRA, BRUNNER.

## TABLE FOR SEPARATION OF THE SPECIES.

- A. Sides of pronotum gently diverging posteriorly in both sexes: the median carina dusky, head not especially large, no wider than front edge of pronotum.
- b. Larger. Anterior field of male wings very broadly fenestrate: the posterior field colored throughout **pulchripennis** Bruner.
- bb. Smaller. Anterior field of male wings narrowly fenestrate: the posterior field colored on basal half. **intermedia** Bruner.
- AA. Sides of pronotum parallel in male at least, the median carina of same color as disk. Head comparatively large, a little wider than front edge of pronotum. Wings hyaline. **argentina** Bruner.

*F. pulchripennis*, n. sp.

Body slender: general color dull brownish testaceous varied with green: antennae in male subensiform, in female strongly ensiform: lateral carinae of pronotum straight, slightly diverging posteriorly in both sexes: the median carina dark brown or black: dorsal portion of head, pronotum and folded wings varying from brown to green in female, brown in male: sides of pronotum and head with body brownish testaceous in female, green becoming mixed with brown on cheeks and metathorax in male: front margin of tegmina in both sexes broadly marked with green: immediately back of this is a rather broad dark stripe more or less interrupted by the heavy white cross-veins found in this particular region: balance of wing brown: hind wings with the basal portion bright vermillion, becoming more dilute towards apex: anterior field broadly fenestrate, the cross-veins on basal portion being angled and directed towards the apex of wing anteriorly.

Length of body: ♂ 24 to 25 mm, ♀ 30 to 32 mm; pronotum, ♂ 4.5 to 4.75 mm, ♀ 5.5 to 6 mm; tegmina, ♂ and ♀ 22 mm; hind femora, ♂ 15 mm, ♀ 18 mm.

Found on the open camp early in December among dry and dead grasses. A very active insect and difficult to capture. When flying the males are exceedingly noisy.

*F. intermedia* n. sp.

A slender species with the sides of pronotum gently expanding towards the posterior edge: head rather small, the apex of tegmina gently expanded and rounded; antennae in male flattened at base, in the female dagger-like. General color of male brownish testaceous, of female green: median carina testaceous to brown: base of hind wings deep rose color: anterior portion fenestrate but less broadly so than in *pulchripennis*. The transverse veins in this portion of the wing less numerous than in the other species—about nine in number.

Length of body: ♂ 20 mm; ♀ 28 mm; of tegmina, ♂ 16 mm, ♀ 20 mm; of hind femora, ♂ 12 mm, ♀ 18 mm.

The numerous specimens examined were collected on the pampas in the vicinity of Carcaraña, F. C. C. A.

*F. argentina* n. sp.

A rather small but comparatively robust species in which the lateral carinae of the pronotum are parallel. The wing covers are but little broadened towards the apex. General color yellowish testaceous: pronotum with the lateral carinae yellow brodered within by rather broad black lines; the anterior edge of front wings green, the disk smoky brown, more or less transparent in the center, the dorsal portion with a faint tinge of greenish: hind wings with the basal posterior portion faintly cinnabar red.

Length of body 21.5 mm; of tegmina 15 mm; hind femora 14.5 mm. A single male from Carcaraña, F.C. C. A.

#### GENUS SINIPTA, STAL.

*S. Dalmani* Stal. A very common locust in dry localities where the grasses are inclined to grow in bunches. One of

the species that winters over as adults. Cordoba (F. Schulz, H. Stempelmann); Carcaraña. (O. Thomas.)

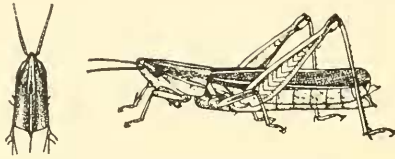


Fig. 8.—*Sinipta Dalmani*, female, and top of head and pronotum.

#### GENUS AMBLYTROPIDIA, STAL.

*A. ferruginosa* Stal. This locust occurs in small numbers from Buenos Aires northward. Specimens are contained in the collections of F. Schulz, H. Stempelmann and O. Thomas. It was also reported by Giglio-Tos.

#### GENUS DICHROATETIX, N. G.

Specimens of a rather small but comparatively robust locust related to the genus *Stenobothrus* were found in considerable numbers over portions of the provinces of Santa Fe and Cordoba. These apparently belong to an undescribed genus which might be characterized as follows:

Fastigium of the vertex rather broad with the margins slightly raised; the lateral foveolae only faintly indicated, linear and visible from above; the vertex above with a percurrent longitudinal carina. Antennae with the joints flattened, slightly constricted in the middle, expanded at the base and towards the apex, in the female about as long as head and pronotum combined, in the male half as long again, in the latter curled toward apex. Frontal costa rather broad, not very prominent and gently sulcate from the antennae to clypeus. Pronotum with the front edge straight; the lateral carinae converging towards the middle, the hind edge a right angle or more, transverse groove about the middle. Tegmina complete, nearly or quite reaching the tip of the hind femora; costal area of wings in male somewhat broadened indicating that the insect might be a noisy one. Hind wings with basal portion red, apex infuscated, the males dusky, females greenish.

*D. viridifrons* n. sp.

The beautiful apple-green face, along with its white labial and maxillary palpi, will at once distinguish this species from any possible other forms of Argentine locusts. Antennae ferruginous above, black or dark brown below. Male with occiput dark testaceous inclining to brown and provided with two diverging darker colored lines which reach the front edge of the pronotum; the latter with



Fig. 9.—*Dichroaettix viridifrons*, female. Fig. 10.—*D. v. viridifrons*, male.

the disk more or less intensely blackened toward the rear; the sides somewhat variegated with light and dark oblique bands which point from the lateral carinae in the rear towards the front. Tegmina brownish with black obscure mottlings along discal area and apical portion. Lower and inner sides of hind femora and hind tibiae in male blackish, except a preapical annulus on femora and a post-basal one on tibiae; posterior tarsi somewhat paler; in female, lower edges only of hind femora blackish, outer, upper, and inner faces greenish. Upper portion of abdomen yellowish with an orange brown tint.

Length of body: ♂ 18 mm, ♀ 24 to 25 mm; pronotum, ♂ 4 mm, ♀ 5.5 mm; tegmina, ♂ 14 to 15 mm, ♀ 17 to 18 mm; hind femora, ♂ 12.5 mm, ♀ 15 mm.

Cordoba (F. Schulz); Carcaraña (O. Thomas).

## GENUS STAURORHECTUS, GIGLIO-TOS.

*St. longicornis* Giglio-Tos. San Lorenzo, Tala (Giglio-Tos) Cordoba (F. Schulz, H. Stempelmann.)

## GENUS STIRAPLEURA, SCUDDER.

This genus is represented in Argentina, so far as the material before me would indicate, by at least four distinct

species none of which seem to have been described. They occur upon the open camp from Cordoba and Santa Fe southward at least to Bahia Blanca, being among the commoner grasshoppers.

TABLE FOR SEPARATING THE SPECIES.

- A. Larger. Tegmina with a distinct, narrow, light-colored subcostal stripe.
- b. General color above reddish brown, more or less marked with black and dark brown. Pronotum with the disk dark and the lateral carinae light. **signatipennis** Bruner.
  - bb. General color above dull testaceous without distinct mottlings or other marks. Pronotum with the disk unadorned; the upper edges of sides blackish. **pallida** Bruner.
- AA. Smaller. Tegmina not provided with an especially distinct, narrow, light-colored subcostal stripe.
- b. Whole insect above more or less varied by lines of green, brown or testaceous and conspicuously marked with black and white. **variabilis** Bruner.
  - bb. Whole insect above quite evenly dull brownish, the markings inconspicuous. **obscura** Bruner.

*S. signatipennis* n. sp.

The larger of the four species belonging to this genus in which the general color above is reddish brown, more or less marked with black or dark brown: fastigium of the vertex but gently depressed, the lateral foveolae well marked, twice as long as broad: pronotum with the median carinae quite prominent the lateral ones being obliterated with the exception of in front and towards the rear where they appear as whitish raised ridges: tegmina and wings extending slightly beyond the tip of the abdomen in both sexes, as do also the hind femora: the latter comparatively robust: basal tegmina with a subcostal white line, the median area provided with a row of rather large subquadrate dusky spots: other spots of same color also scattered upon the dorsal, apical, and costal areas of wing: posterior femora with the knees above black, indications of dusky bands on upper edge of exterior and interior faces, also sulcus: hind tibiae pale purple.

Length of body: ♂ 17 mm, ♀ 22 mm: pronotum, ♂ 3.5 mm, ♀ 4 to 4.25 mm: tegmina, ♂ 12.5 mm, ♀ 16 mm: hind femora, ♂ 10 mm, ♀ 13 mm.

This insect seems to be quite variable both in size and color and is distributed over a considerable portion of the Republic from the Pampa Central and extending into Uruguay to the eastward. Whether or not it will prove to be the insect described by Blanchard as *Oedipoda signatipennis* I cannot say since I have not access to his description. Dr. Berg of the National Museum in Buenos Aires has written an article for the Stettiner Entomologische Zeitschrift in which he mentions certain Orthoptera from the Pamapa Central one of which he doubtfully refers to *Stenobothrus signatipennis*, and for this reason I am not quite certain but that he refers to the present insect.



Fig. 11.—*Stirapleura pallida*, female.

*S. pallida* n. sp.

This insect may be distinguished from the others by the absence of markings upon the disk of the pronotum and dorsal edges of the head and tegmina, and by having the lateral lobes of the pronotum banded with black. General color testaceous or dead grass brown, with the sides of head, back of eyes, and lateral lobes of pronotum marked by a broad dark line in the center of which is a narrower one of the general body color. The tegmina are provided with a subcostal greenish white line, and the disk with a longitudinal series of quadrate dusky spots. Hind femora with indications on the upper edge of dusky bands, below more or less tinted with red; hind tibiae reddish.

Length: of body, average, ♂ 15 mm, ♀ 20 mm: pronotum, ♂ 3 mm, ♀ 3.85 mm: tegmina, ♂ 11.5 mm, ♀ 15 mm: hind femora, ♂ 10 mm, ♀ 13.5 mm.

Carcaraña, F. C. C. A. (O. Thomas); and other portions of Santa Fe and Buenos Aires provinces.

*S. variabilis* n. sp.

A rather small though compact species in which the body is more or less varied by lines of green, brown or testaceous and marked with black and white. General color of male brownish testaceous, of female greenish. The face in the male testaceous, in the female green; top of head (male) with a rather broad central testaceous line bordered on each side by an equally broad black band which is extended upon the disk of pronotum taking in the lateral carinae and extending as a narrow dagger-like stripe upon the dorsal por-

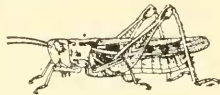


Fig. 12.—*Stirapleura variabilis*—female.

tion of the tegmina: the lateral carinae whitish: there is a rather heavy raised line on lateral side of pronotum which is white in both sexes, female with slight indications of black line bordering the eyes above and the white carinae of pronotum otherwise obliterated. Wings with a discal field provided with from four to five rather large blackish spots separated by the general color of wing. Hind femora showing indications of oblique dusky bands; knees also dusky: posterior tibiae with the basal portion whitish testaceous, becoming dusky toward the middle, from which point to the apex they are reddish; feet whitish, lower surface light testaceous.

Length of body: ♂ 10.5 mm, ♀ 17 to 18 mm: pronotum, ♂ 2 mm, ♀ 3.25 mm: tegmina, ♂ 8 mm, ♀ 12 mm: hind femora, ♂ 7 mm, ♀ 10.5 mm.

Bahia Blanca and Pampa Central, where it is rather abundant on dry camp. Not observed in the collections examined.

*S. obscura* n. sp.

A medium sized species in which the general color is dark brown, more or less variegated or mottled with light



testaceous. Head and pronotum, with the exception of lower posterior third, dark brown, the latter being light testaceous: wings testaceous, having most of the veins and cross veins black or dark brown, some of them heavier than others and giving the wings a slightly mottled appearance. Hind femora with indications of bands, especially on the inner face: the knees partly black, lower sulcus light testaceous: hind tibia, with the apical half reddish, basal half testaceous: lower side of body, especially abdomen whitish, balance becoming brownish above.

Length of body: ♂ 10 to 11 mm, ♀ 14 mm: pronotum, ♂ 2.50 to 2.50, ♀ 2.75: tegmina, ♂ 10 mm, ♀ 13 mm: hind femora, ♂ 7 mm, ♀ 10 mm.

Fairly common during the month of December at Bahia Blanca. Not seen elsewhere, nor observed in any of the collections.

#### GENUS PLECTROTETRIX, McNEILL.

##### *P. pictus* n. sp.

General color above dark brown, beneath white or light yellow: above varied with green and light testaceous. The posterior tibiae and under side of posterior femora bright carmine to purple, the hind femora with two oblique light bands on outer and inner faces, also a preapical annulus of same color, and rather broad, bright colored annulus at base of hind tibiae. The fastigium of the vertex blunt and gently sulcate above; the lateral foveolae represented only by a few punctures forming an interrupted depression about twice as long as broad in the male; in the female nearly obliterated: frontal costa rather prominent and broad, gradually widening from a point immediately above the base of the antennae to the clypeus, little or not at all sulcate. Pronotum with the median carina percurrent, severed only by the last transverse groove, a little in advance of the middle. Lateral carinae of pronotum greenish or testaceous; converging towards the middle where they are interrupted between the transverse sulci: sides of pronotum either green or light testaceous

with a medium dark spot: the posterior lobe deeply and coarsely pitted; the anterior lobes smooth; mesa and metapleura coarsely pitted with the sides gently compressed. There is also a dark streak extending from lower edge of eyes to outer margin of clypeus: the latter and outer edges of mandibles carneous. Tegmina provided with a subcostal green stripe, the discal area more or less strongly mottled with alternate white or green and black markings basally but becoming general on the apical half of wing. Tegmina and wings extending beyond the tip of hind femora: the latter comparatively heavy at the base, reaching slightly beyond the tip of abdomen in both sexes: hind tibiae with from 9 to 11 spines in outer row.

Length: of body ♂ 28 to 30 mm, ♀ 40 to 45 mm; pronotum, ♂ 5 mm, ♀ 7.5 mm; tegmina, ♂ 26 mm, ♀ 31 to 38 mm; hind femora, ♂ 18 mm, ♀ 22 to 27 mm.

This insect is quite numerous in the provinces of Cordoba and Sante Fe, in some localities being sufficiently plentiful to cause damage to garden and some field crops grown in low places where the vegetation becomes unusually rank.

Specimens were seen in the collections of F. Schulz, H. Stempelmann, O. Thomas, and both the National and La Plata museums. A considerable series of these insects was also taken at Carcaraña and Rosario.

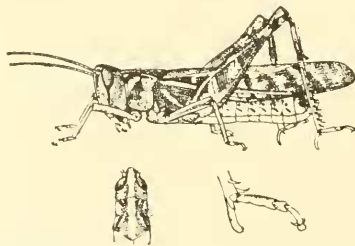


Fig. 13.—*Plectrotettix pictus*, male, tip of hind tibia and top of head and pronotum.

#### GENUS EUPLETROTETRIX, N. G.

Body of medium size, slightly compressed: tegmina and wings complete: posterior femora moderately robust at base,

reaching (female) or slightly surpassing the apex of abdomen (male). Inner lower spur of hind tibiae nearly or quite twice the length of the upper one. The tibiae with ten spines in outer row. Tegmina with a well developed intercallary vein. Fastigium of the vertex a little narrower than the shortest diameter of the eyes, the foveolae shallow, with a median carina running through it and continued upon the occiput to the front edge of pronotum: the edges of foveola blunt and turning inwards and backwards at the upper apex of the eyes where they approach quite closely to the median carina, becoming dimmer upon the occiput, though present in the shape of rows of little tubercles almost to the front edge of the pronotum. Frontal costa prominent, rather broad above between the base of the antennae, becoming broader below, gently sulcate above the ocellus continuing to the clypens; front rather prominent, somewhat rounded when viewed from the side. Prothorax as in *Plectrotettix* but with the lateral carinae less prominently converging towards the middle and continuous throughout, cut by the middle and last transverse sulci, the last sulcus about the middle.

TABLE FOR SEPARATING THE SPECIES.

- A. Smaller species. General color uniform ferruginous or light brown, the markings inconspicuous and irregular.
- b. Lateral carinae of pronotum quite prominent, but gently converging near the middle. Mottlings of tegmina confined chiefly to disk. **ferrugineus** Bruner.
  - bb. Lateral carinae of pronotum feeble on anterior lobe, considerably converging near the middle. Mottlings of tegmina quite generally distributed. **conspersus** Bruner.
- AA. Larger species. General color testaceous or green, the markings quite conspicuous and regular.
- b. Disk of pronotum more or less plainly marked with black along inner edge of the well-developed lateral carinae. Tegmina with a row of discal spots. General color testaceous, streaked with brown. **Schulzi** Bruner.
  - bb. Disk of pronotum not plainly marked with black lines along inner edge of lateral carinae. Tegmina with dark markings not confined to disk. General color green or greenish yellow. **prasinus** Bruner.

*Euplectrotettix ferrugineus* n. sp.

General color ferruginous, marked with lines and dots of dark brown and black. Hind tibiae red, tip of spines black.

Antennae with the basal joints depressed becoming filiform apically, about as long as the head and pronotum combined. Vertex slightly acute-angled and extending in front of the eyes nearly (male), or quite (female), as far as the distance between them. Head when viewed from above about as wide as front edge of prothorax: the disk of latter somewhat narrower in front than behind: the lateral carinae of male and female nearly as prominent as the median. Tegmina of male, with costal edge hyaline and more or less regularly veined with diagonal cross veins, this area slightly expanded: a median row of small subquadrate black spots: in the female the dorsal edge is also more or less mottled with small dark brown flecks, a few of which are also scattered upon the apical third of wing. Sides of pronotum and body, together with the hind thighs along their carinae flecked with black: there are also dim indications along upper margin on latter of three dusky and three light bands: lower sulcus of femora, and hind tibiae bright coral red, the latter pale towards the base: knee and basal portion of tibiae black: venter yellow.

Length: of body, ♂ 12 to 13 mm, ♀ 21 mm: of pronotum, ♂ 3 mm, ♀ 3.75 mm: of tegmina, ♂ 14 mm, ♀ 16 mm: of hind femora, ♂ 10 mm, ♀ 12 mm.

This insect is fairly common on the sandy knolls about Asuncion, Paraguay, and the more elevated regions of the territory of Formosa across the river to the west.

*Euplectrotettix conspersus* n. sp.

In structure and size very similar to the preceding, but with the markings more scattered over the whole insect. Ground color dull testaceous. Head slightly broader than front edge of prothorax, the latter with the lateral carinae on the front lobe rather dim and considerably convergent toward the middle, cut by the last transverse sulcus about the middle: posterior edge a little more than a right angle: the sides of head provided with several parallel transverse carinae: entire surface more or less regularly and coarsely punctate. Posterior femora with indications of oblique

dusky bands on outer face and three on upper edge which pass to the inner face: the lower sulcus dull testaceous: hind tibiae carneous or dull flesh color towards apex, becoming lighter towards the base; knee and apex of hind femora as in the preceding species.

Length (female): of body 21 mm, of pronotum 4 mm, of tegmina 16.5 mm, of hind femora 11 mm.

Found upon the eastern slopes of the Andes at Mendoza, January 27th.

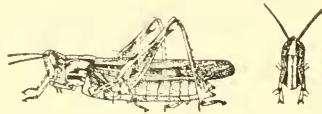


Fig. 14.—*Euplectrotettix conspersus*—female

*Euplectrotettix Schulzi* n. sp.

The body compressed, rather deep at mesothorax; occiput short, same width as front edge of prothorax, the latter slightly compressed from the sides; the lateral carinae nearly as prominent as median in the male, parallel to last transverse sulcus, from this point backward slightly divergent; in the female converging to a little in front of last transverse sulcus; posterior angle very obtuse; the hind portion provided on sides with irregular transverse ridges. Posterior femora extending slightly beyond the tip of abdomen in both sexes. Tegmina widest a little beyond the middle. Color variable, the general ground color being light testaceous to brownish ferruginous, more or less regularly streaked above and on the sides with black, the posterior femora showing three well-defined dusky oblique bands on outer face and across the upper margin, and internally. Tegmina with a subcostal line of white or green, obliterated in some specimens; the discal field provided with rather large regular dusky spots, these markings continuing almost to the apex of the wing; the upper and lower edges usually more or less free from markings, though in some specimens where the disk of the pronotum is marked along the inner

edge of lateral carinae with black this same color extends upon the dorsal angle of tegmina. Face below the eyes usually furnished with a well-defined black streak. Sides of pronotum with the usual tryxaline light and dark streaks. Hind tibiae varying from dull red to bright red, with a pale basal annulus; knees and apex of femora as in the preceding forms.

Length: of body, ♂ 15 mm, ♀ 23 mm; of pronotum, ♂ 3.25 mm, ♀ 4.5 mm; of tegmina, ♂ 14 mm, ♀ 18 to 20 mm; of hind femora, ♂ 10.5 mm, ♀ 13 to 14 mm.

Very common in the vicinity of Cordoba where it may be found during the winter months among the dead bunch grass growing on the sandy upland. From the collection of F. Schulz.

*Euplectrotettix prasinus* n. sp.

This is a somewhat larger, more robust insect than any of the preceding, in which the head is somewhat broader than the front edge of pronotum. The latter with the middle carina considerably the strongest, the lateral ones gently converging in front of the middle from which point they diverge both anteriorly and posteriorly; the hind edge somewhat more than a right angle; the sides and head quite smooth, the punctulation being feeble. General color of head and thorax dull apple green; tegmina, base of abdomen, and legs dull testaceous; the tegmina with indication of discal spots. Hind femora showing traces of dusky and light bands; hind tibiae red; lower sulcus of femora yellow; knees black; venter yellow.

Length (female): of body, 30 mm, of pronotum 5.5 mm, of tegmina 21 mm, of hind femora 15 mm. Cordoba in January, where it is found in rank grass; not plentiful.

SUB-FAMILY OEDIPODINAE.

In some parts of the North American continent this sub-family becomes very numerous in genera and species but it seems to be represented in Argentina by less than a dozen species. None of these insects are of any special importance

from the economic standpoint but the various species of *Bufoacris* become interesting on account of their peculiar obese structure and wingless bodies. These insects are found in the arid and sub-arid regions southward. The forms of this sub-family may be recognized by the following:

TABLE FOR THE SEPARATION OF THE GENERA.

- A External margin of posterior tibiae without the apical spine.
- b. Posterior tibiae terete, the lateral margins rounded, the apical spurs compressed so that they are narrower than deep at base.
- c. Body apterous. Pronotum behind straight or gently emarginate.
- d. Head perpendicular, the frontal costa irregular, dilated at the ocellus, not sulcate. Body tuberculate.
- e. Antennae slender, moderately long, somewhat flattened. Head tumid. **PAPIPAPPUS** Saussure.
- ee. Antennae short, moderately heavy and apically somewhat clavate. Head not tumid. **PAPPUS** Saussure.
- dd. Head more or less declivant, the vertex angulate: frontal costa straight, sulcate. Pronotum costulate. **PHRYNOTETTIX** Saussure.
- cc. Body winged: the hind pair with a transverse dusky band. Pronotum angulate behind. **TRIMEROTROPIS** Stal.
- bb. Posterior tibiae more or less flattened apically, the edges acute, the apical spurs depressed so that they are broader than deep at base. Winged. **CELOPTERNA** Stal.
- AA. External margin of posterior tibiae provided with an apical spine. Body strongly depressed, apterus. Pronotum with the posterior margin not produced: the mesonotum uncovered. Posterior tibiae many-spined. **BUFOXACRIS** Walker.

GENUS PAPIPAPPUS, SAUSSURE.

*P. clarazianus* Sauss. This odd looking insect was described by Dr. H. de Saussure from specimens collected by G. Claraz between the rivers Rio-Negro and Rio-Chubut. No specimens have been examined by the writer.

GENUS PAPPUS, SAUSSURE.

*P. patagonus* Sauss. Prodrum OEdipod, p. 100. (Rio-Negro, G. Claraz).

GENUS PHRYNOTETTIX, SAUSSURE.

A single female specimen of an insect now in my possession that was collected along with five others by some member of the U. S. Fish Commission steamer Albatross staff on the Straits of Magellan, is referred to this genus. It

seems to be distinct from both the *Phrynotettix rana* Sauss. and *P. peruviana* Sauss.—the former from Chile and the latter, as the name would indicate, from Peru.

*Phrynotettix Magellanicus* n. sp.

Rather robust, comparatively small (15 mm in length), apterous: greenish testaceous with indications along lateral carinae, thorax, sides of back, and middle of sides of abdomen of dark brown or black lines.

Fastigium of vertex somewhat acute angled, considerably projecting in front of the eyes. The lateral foveolae large, deep, about one-half longer than wide. Frontal costa very narrow above, gradually widening below, sulcate throughout, and reaching clypeus. Antennae about fifteen-jointed, the joints flattened, about as long as head and two-thirds of pronotum: the latter short, truncate in front, slightly emarginate behind, about reaching front edge of metathorax. The median carina quite heavy, continuous throughout and not cut by transverse sulci. The lateral carinae converging towards middle and again expanding posteriorly, a little closer together at the hind edge of pronotum than in front. The thorax and abdominal segments with a mediodorsal carina throughout: also provided with supplementary carinae in continuation of the lateral ones of pronotum. In addition to these there is also a faint indication of another carina on middle of lateral lobes of pronotum which is also continuous upon the side of abdomen, below which is a black line. Posterior femora moderately slender, the hind tibiae with ten spines in outer row. Foveolae of vertex with median longitudinal carina continued upon occiput.

Length: of body 15 mm, of pronotum 3 mm, of hind femora 8 mm.

GENUS TRIMEROTROPIS, STAL.

*T. pallidipennis* Burm. This insect is represented in all of the collections examined by me. There are specimens from Cordoba (Schulz): Rosario (Stempelmann): Carcaraña (O.



Thomas). It occurs throughout all of tropical and subtropical America, and has, therefore, received several names. Giglio-Tos referred it to *Trachyrhachis borealis* Sauss. (Boll. Mus. Zool. ed Anat. Comp. di Torino, IX, No. 184, p. 14) but later corrected the error.

#### GENUS COELOPTERNA, STAL.

*C. acuminata* (de Geer). Rosario, St. Fe (Stempelmann); Carcaraña (O. Thomas.)

This insect was made the type of a distinct sub-family by Stal; but Brunner v. Wattenwyl in his "Revision du Systeme des Orthopteres" places it along with the OEdipodinae where I am willing to let it remain at present. Blanchard redescribes and figures this insect under the name *Poulinia mucosa* (D'Orbigny, Voyage dans L'Amer. Merid., Vol. VI. Pt. 2, Insectes, p. (216), Pl. XXVII, Fig. 6), and Giglio-Tos (Boll. Mus. Zool. ed Anat. Comp. Torino, IX, No. 184, p. 7) describes a new variety with abbreviated wings as *Coelopterna acuminata* var *brevipennis*. The insect is one that lives upon aquatic plants and often must swim, hence the peculiar development of hind tibiae and their spurs.

#### GENUS BUFONACRIS, WALKER.

*B. terrestris* Walk. Four specimens of this peculiar, robust, wingless locust were taken at Gregory Bay on the Straits of Magellan by some member of the U. S. Fish Commission force during the cruise of the steamer Albatross for the years 1887-88. Walker's specimen was also taken at the same locality, hence Saussure is mistaken when he discredits Walker's statement as to habitat of this insect (Additamenta ad Prodromum OEdipodiorum, p. 160, foot note).

*B.*—sp? Several specimens were observed in the collection of the La Plata Museum that evidently belong here. They seemed to belong to at least two species, and, if my memory does not fail me, were taken in the Territory of Chubut.

## SUB-FAMILY PYRGOMORPHINAE.

The insects belonging to this sub-family are somewhat aberrant when we take into consideration the forms which occur in this country, the typical forms of the group having the face very much slanting towards the rear and the apex of the head considerably advanced in front of the eyes, while the Argentina forms have the face nearly perpendicular and the vertex little or not at all advanced in front of the eyes. The typical form of the body of these insects also is somewhat slender, smooth, and fusiform, while here in Argentina they are very obese and more or less covered with spines and wart-like projections. Some of the species are quite numerous in portions of the country and have been even reported at different times to attack and destroy the tobacco plant which they feed upon.

## TABLE FOR SEPARATING THE GENERA.

- A. Body more or less graceful and cylindrical, somewhat rugose. The antennae filiform. Pronotum feebly carinated.
- b. Tegmina and wings perfectly developed, extending considerably beyond the tip of the abdomen in both sexes. Carinae of hind femora smooth. Internal angles of mesosternal lobes rounded at apex. **OSSA** Giglio-Tos.
- bb. Tegmina and wings somewhat abbreviated. Carinae of hind femora toothed. Internal angles of mesosternal lobes not rounded. **OMMEXECHA** Serville.
- AA. Body very obese and greatly depressed; coarsely tuberculate, carinated and spined. Antennae with the joints somewhat flattened, subsensiform. Pronotal carina always more or less cristate.
- bb. Tegmina and wings present. Pronotum without the lateral toothed, leaf-like expansion; its hind border broadly angulate and adorned with five flat, tooth-like projections—the middle one furcate. **SPATHALIUM** Bolivar.
- b. Tegmina and wings wanting. Pronotum furnished at lower lateral edges with a toothed, leaf-like expansion; its hind border broadly rounded and adorned with a series of six distinct, heavy, blunt spines. **GRÆA** Philippi.

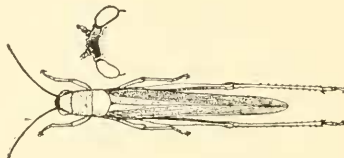


Fig. 15.—*Ossa viridis*, and tip of vertex.

## GENUS OSSA, GIGLIO-TOS.

## TABLE FOR SEPARATING THE SPECIES.

- A. Body covered with long white hair. Tegmina above with an orange spot at base. Eyes globose. Posterior femora moderately heavy.  
**bimaculata** Giglio-Tos.
- AA. Body subglabrous. Tegmina above without a basal spot. Eyes ovoid. Posterior femora somewhat slender. **viridis** Giglio-Tos.

*O. bimaculata* Giglio-Tos. Resistencia, Chaco (Giglio-Tos).

*O. viridis* Giglio-Tos. San Lorenzo, Jujuy (Giglio-Tos); Cordoba (F. Schulz); Carcaraña, Santa Fe (O. Thomas). This last named species is exceedingly common in some localities, where it seems to prefer certain food-plants to others. One of these is a *Nicotiana* or closely related form with yellowish blossoms. It might, therefore transfer its attention to the tobacco plant where this is cultivated.

## GENUS OMMENECHA, SERVILLE.

## TABLE FOR SEPARATING THE SPECIES.

- A. Tegmina not reaching the apex of abdomen.  
 b. General color green; tegmina shorter. Hind femora externally smooth. **virens** Serv.  
 bb. General color dull brown; tegmina longer. Hind femora externally hirsute. **Servillei** Blanch.
- AA. Tegmina reaching beyond the tip of abdomen. The genicular lobes of hind femora two-spined. **macropterum** Blanch.

*O. virens* Serv. Recorded from Buenos Aires (Serville). Perhaps only a freshly molted specimen of the next species.

*O. Servillei* Blanch. Resistencia, Chaco (Giglio-Tos); Corrientes (Bolivar). This insect occurs in arid localities and according to Blanchard is especially fond of tobacco as a food-plant.

*O. macropterum* Blanch. San Pablo, Tucuman; San Lorenzo, Jujuy (Giglio-Tos). This insect was redescribed as *O. Brunneri* by Bolivar according to Dr. Karsch. (Ent. Nachricht., XIV, p. 329, 1888); and the *O. macropterum* Blanch. referred to the new genus *Spatholium* (Mong. de los Pirgomorfinos, p. 34).

## GENUS SPATHALIUM, BOLIVAR.

## TABLE FOR SEPARATING THE SPECIES.

- A Tegmina longer than the abdomen.
- b. Wings dusky, as long as the tegmina. **Sommeri** Burm.
- bb. Wings hyaline, much shorter than tegmina. **Audouini** Blanch.
- AA. Tegmina shorter than the abdomen.
- b. Body of a nearly uniform color, either green or brownish-gray.
- c. Body comparatively smooth, the tubercles of head, pronotum and hind thighs comparatively small and blunt. General color grass-green. **viridis** Bruner.
- cc. Body more coarsely tuberculate. General color grayish brown. **obscurum** Bruner.
- bb. Body with tegmina and limbs more or less streaked with testaceous, brown and black.
- c. Pronotum armed on disk with numerous spine-like tubercles. Grayish-brown, varied with streaks of light testaceous and dull black. **hispidum** Bruner.
- cc. Pronotum with the disk armed less decidedly with tubercles. Yellowish-gray, but little varied by streaks of darker hue. **testaceum** Bruner.

*S. Sommeri* Burm. Recorded as occurring at Montevideo (Karsch). I do not know this locust.

*S. Audouini* Blanch. Salta (Giglio-Tos).

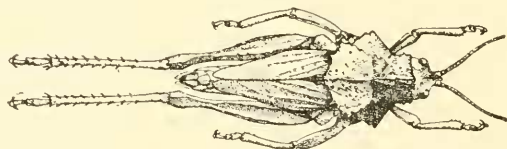


Fig. 17.—*Spathalium viridis*, female.

*Spathalium viridis* n. sp.

Of a uniform grass-green color, more or less varied along the margins of elytra, posterior femora, hind edges of abdominal segments, and base of legs with brownish purple. Body comparatively smooth, the surface of pronotum, meso- and metapleurae and femora with the tubercles small and blunt. The frontal costa continuous with the tubercles small and blunt. The frontal costa continuous with the sulcus of fastigium, very narrow above and widening but little to a point half way between the ocellus and clypens, where the lateral carinae end abruptly. From this point on the face

is somewhat raised, indicating a continuation of the frontal costa but without well-defined lateral carinae. Tegmina about two-thirds as long as abdomen, pointed at apex and scarcely meeting on back.

Length: of body, average. ♂ 23 mm, ♀ 34 mm; of pronotum, ♂ 7 mm, ♀ 10.5 mm; of tegmina, ♂ 15 mm, ♀ 16 mm; of hind femora, ♂ 12 mm, ♀ 16 mm.

Found only at Carcaraña F. C. C. A. in the province of Santa Fe, where it occurs in moderate numbers upon the open camp.

From collections of O. Thomas and A. Kurriger.

*Spathalium obscurum* n. sp.

This insect is very similar in general structure and size to the preceding, but differs markedly from that in having the body entirely dark brownish gray, more or less varied with black or deep brown. The thorax, pleurae, and femora are much more heavily armed with tubercles and spines than in the preceding. The frontal costa in some specimens is sulcate above and continuous with sulcation of fastigium: the lateral carinae converging to a point below the antennae, then broadening again to ocellus and below where they end as in preceding species. Posterior femora with indications of two oblique dark colored bands on outer face, in some specimens accompanied by one of much lighter color just beyond the middle. Tegmina with a more or less well defined row of black dots along the discal field and upper edge, otherwise of a uniform dull brown color.

Dimensions slightly less than preceding.

This insect has been taken at Cordoba (F. Schulz) and Carcaraña (O. Thomas). Less numerous than the preceding.

*Spathalium hispidum* n. sp.

In size and general structure similar to the two preceding, but differs from both of them in having the body very much variegated with lighter and darker streaks of yellowish gray, brown, and black; also in having the pronotum armed with very strong tubercles which are spine-like in character,

projecting posteriorly on the hind lobe of pronotum and on sides of meso- and metathorax. Posterior femora comparatively smooth. The face of the frontal costa continuous from the juncture with fastigium of vertex to clypeus; the lateral

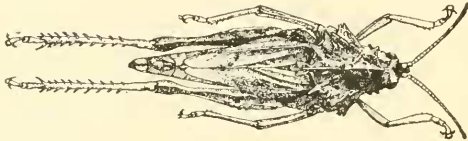


Fig. 18.—*Spahalm hispidum*, female.

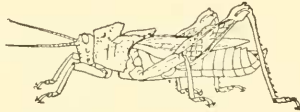


Fig. 19.—*Spathalium*, male.

carinae parallel to a point a little below the ocellus where they diverge strongly to about three times the original width of costa when they proceed nearly parallel to within a very short distance of the clypeus and then again diverge.

As indicated above, the general color of this insect is brownish-testaceous, varied with lighter and darker streaks. The lateral carinae of pronotum, a line near the lower margin of the lower edge along with carinae on all the femora, the cheeks, and a transverse line between upper edges of eyes, yellowish clay color; the intervening spaces brown becoming blackish in some specimens. Tegmina with the discal field provided with a row of blackish spots, some of the upper veins or interspaces black, other portions varied with streaks of lighter and darker brown. Hind femora with oblique dusky bands in most specimens, the outer face marked beyond the middle with a light band.

Length: of body, ♂ 22-23 mm, ♀ 37 mm; of pronotum, ♂ 8 mm, ♀ 11.5 mm; of hind femora, ♂ 13 mm, ♀ 17 mm.

Specimens of this insect have been seen from Cordoba (F. Schulz) and others collected at Carcaraña where it is, perhaps, the most numerous of the three species described above and found at this locality.

*Spathalium testaceum* n. sp.

A fourth species of this genus was found at Toay, Pampa Central. This insect is very similar in general form to those described above, but differs from them in having the spines or projections on the pronotum much longer and leaf-like than in the preceding forms. It is also considerably larger, and has the body uniformly yellowish brown with comparatively few marks of darker color on sides and disk of pronotum, and on the middle of outer face of hind femora and the disk of tegmina.

Frontal costa gently sulcate, the sides parallel to a point a little below ocellus, then rather broadly but roundly divergent, then continuous to clypeus in a somewhat similar form to that of *spinatum*. The hind femora with a toothed leaf-like expansion on lower outer carina about midway between base and apex. The head much broader in proportion to size of insect than in any of the preceding species.

Length (female): of body 45 mm, of pronotum 13 mm, of tegmina 20 mm, of hind femora 15 mm.

GENUS GRAEA, PHILIPPI.

TABLE FOR SEPARATING THE SPECIES.

- A. More graceful, comparatively smooth, varied with light and darker shades of testaceous and brown.      \* **horrida** Philippi.  
 AA. More robust: much more rugose—unicolorous.      **monstrosa** Bruner.

*G. horrida* Philippi. This insect has been recorded from various localities between Bahia Blanca and Catamarca, but some of the records undoubtedly refer to the next species. Specimens of *G. horrida* have been examined from Mendoza, San Luis and Cordoba (F. Schulz, H. Stempelmann).

*Graea monstrosa* n. sp.

In structure very similar to *Graea horrida* of Philippi but somewhat broader and more rugose, unicolorous, varying from a dull testaceous brown to dark wood brown, in some specimens greenish yellow. Some of the males have the posterior portion of the disk of pronotum more or less swollen and of a lighter color, otherwise as indicated above, uniform throughout. The tubercles on outer face of hind femora five in number instead of six as in *G. horrida*.

Length: of body, ♂ 28 mm, ♀ 34-36 mm; of pronotum, ♂ 8 mm, ♀ 9.5 mm; width of pronotum in widest place, ♂ 9 mm, ♀ 14 mm; of hind femora, ♂ 11.5 mm, ♀ 13 mm; of antennae, ♂ 10 mm, ♀ 12 mm.

This insect is found in moderate numbers from Bahia Blanca at the south to Cordoba in the north, being confined chiefly to uplands where it occurs on sandy soil among the short scattered vegetation.

From collections of H. Stempelmann and F. Schulz.

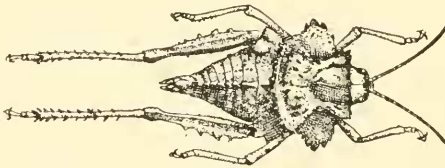


Fig. 20.—*Graea monstrosa*, female.

## SUB-FAMILY ACRIDIINAE.

This is by far the most extensive sub-family of locusts represented in the region covered by the present paper, and contains, with but two or three exceptions, all of the destructive species. The following rather long table for the separation of the genera to which these insects belong will be of some value to the reader in separating the many forms that occur in any particular region. In genera where more than one species occur there will also be found tables for the separation of the different species. Those which have



been thus far known to do damage to cultivated vegetation or to grasses growing on the pampas will be mentioned in detail under the respective species.

TABLE FOR SEPARATING THE GENERA.

- A. Posterior Tibiæ provided with an apical spine above in both margins.
- b. Fastigium of the vertex horizontally greatly produced.
- c. Crest of the pronotum serrate throughout.
- PRIONOLOPHA** Stal.
- cc. Crest of the pronotum not serrate or sometimes posteriorly crenulate, or sometimes cut by the transverse sulci.
- d. Lateral carinæ of the pronotum converging toward the front.
- e. Carinæ of the frontal costa parallel or gently diverging above the ocellus.
- f. Tegmina and wings complete, equaling or surpassing the abdomen.
- TROPIDONOTUS** Serv.
- ff. Tegmina and wings abbreviated.
- ALCAMENES** Stal.
- ee. Carinæ of the frontal costa diverging above the ocellus.
- dd. Lateral carinæ of the pronotum parallel or diverging toward the front.
- ELÆOCHLORA** Stal.
- bb. Fastigium of the vertex sloping or depressed.
- c. Wings with that portion just back of the vein which divides the first and second parts dilated and provided with numerous parallel transverse veins.
- d. Fastigium of the vertex subtriangularly acuminate. Frontal costa compressed. Pronotum above rounded; lateral carina obliterated in front of last transverse sulcus, blunt back of it.
- RHOMALEA** Burmeister.
- dd. Fastigium of the vertex obtuse. Frontal costa not compressed or sulcate.
- e. Median carina of the pronotum not cristate.
- f. Head somewhat smooth. Frontal costa above the antennæ obtusely sulcate.
- ZONIOPODA** Stal.
- ff. Head rugulose. Frontal costa usually continuous to the clypeus, sulcate.
- CLARAZELLA** Piet. et Sauss.
- e. Median carina of the pronotum elevated into a crest which is interrupted by the sulci.
- TROPIDACRIS** Scudder.
- cc. Wing with that portion just back of the vein which divides the first and second parts not dilated nor provided with transverse parallel veins. Fastigium of the vertex rounded and fading into the frontal costa.
- DIPONTHUS** Stal.
- AA. Posterior tibiæ with the apical spine absent from the upper outer margin.
- b. Posterior tibiæ more or less flattened toward the apex, the margins acute.
- c. Mesosternal lobes contiguous nearly throughout in a straight line. (Tegmina acuminate.)
- d. Fastigium of the vertex as long or longer than the eyes.
- e. Fastigium of the vertex with a single deep groove. Interocular space of the vertex very narrow.
- LEPTYSMSA** Stal.
- ee. Fastigium of the vertex provided with four narrow shallow grooves. The interocular space wider.
- LEPTYSMINA** Giglio-Tos.

dd. Fastigium of the vertex shorter than the eyes.

**ARNILIA** Stal.

cc. Mesosternal lobes more or less distant. Prosternal tubercle conical, somewhat acute.

d. Prosternum with the hind margin rounded. Pronotum cylindrical, when viewed from the side straight above, the metazona not elevated. Frontal costa below the ocellus and lateral carinae of face subobsolete. Eyes very oblique, less prominent.

**STENOPOLA** Stal.

dd. Pronotum with hind margin obtuse-angled.

**PARACORNOPS** Giglio-Tos.

bb. Posterior tibiae terete, not laminate, the margins rounded.

c. Posterior tarsi with the first and second joints subequal in length. Fastigium of the vertex horizontal or subhorizontal, somewhat prominent. The front strongly oblique. Tegmina as long or longer than abdomen. Pronotum sub-cylindrical.

**BUCEPHALACRIS** Giglio-Tos.

cc. Posterior tarsi with the second joint distinctly shorter than the first.

d. Fastigium of the vertex triangular or in front truncate, divided from the frontal costa by a transverse carina or distinct angle.

e. Upper carina of hind femora smooth.

f. Interspace between mesosternal lobes narrower than the lobes themselves, distinctly longer than wide. Prosternal tubercle conical, the apex acute. Mesosternal lobes in female distinct. Interspace of vertex between eyes not narrower than widest part of frontal costa.

**ALEUAS** Stal.

ff. Interspace between mesosternal lobes of about equal width with the lobes themselves, quadrate.

**JODACRIS** Giglio-Tos.

e. Upper carina of hind femora more or less serrate. Fastigium of the vertex horizontally projecting, acuminate.

f. Pronotum rugose with the hind margin rounded, the median carina visible throughout. Tegmina and wings somewhat abbreviated. Vertex between the eyes moderately broad.

**VILERNA** Stal.

ff. Pronotum at most coarsely punctate on posterior lobe, the hind margin angulate and with the median carina obliterated between the transverse sulci. Tegmina and wings greatly surpassing the abdomen. Vertex between the eyes very narrow.

**OSMILIOLA** Giglio-Tos.

dd. Fastigium of the vertex deflexed or horizontal, gently fading into the frontal costa.

e. Mesosternal lobes longer than wide, their internal margin straight.

**SCHISTOCERCA** Stal.

ee. Mesosternal lobes transverse or of equal width and length, their internal margin rounded.

f. Posterior tibiae furnished with eight or sometimes more than eight spines in the outer row.

g. Tegmina equaling the abdomen in length or abbreviate, never lobiform or rudimentary, always with the inner margins overlapping.

h. Head small, not exerted, the hind part narrower than front edge of pronotum: occiput and vertex on the same plane with the pronotum.

**ATRACHELACRIS** Giglio-Tos.

- hh. Head larger, distinctly exerted, the hind part as wide or very little narrower than front edge of pronotum.
- i. Pronotum dilated behind. Cerci of male with the apex graceful. **DICHIROPLUS** Stal.
- ii. Pronotum cylindrical. Cerci of male broadly spatulate. **SCOTTUSSA** Giglio-Tos.
- gg. Tegmina lobiform, lateral, distant from one another, or meeting above, but never with the edges overlapping.
- h. Pronotum with the posterior edge rounded. Head very large, distinctly wider than the posterior portion of pronotum. Cerci of male, except of base, styliform. **SCOPAS** Giglio-Tos.
- hh. Pronotum with the posterior edge truncate or emarginate. Head much smaller, not as wide as hind border of pronotum. Cerci of male more or less flattened and curved. **PARADICHIROPLUS** Brunner.
- ff. Posterior tibiae generally with less than eight spines, usually with six to seven, in outer row. Frontal costa pereurrent, straight, not at all or but little produced between the antennae. Tegmina and wings fully developed. **OSMILIA** Stal.

### GENUS PRIONOLOPHA, STAL.

*P. serrata* (Linn.) This large locust has been taken in the provinces of Tucuman, Salta, Jujuy and the territory of the Chaco (Giglio-Tos).

### GENUS TROPIDONOTUS, SERV.

#### TABLE FOR SEPARATING THE SPECIES.

- A. Crest of the pronotum more or less crenulate or even serrulate posteriorly. Genicular angles of hind femora acute, a little lengthened.
- b. Tegmina testaceous, more or less mottled with brown.
- c. The markings of tegmina large, forming more or less well-defined bands.
- d. Hind femora very long, reaching considerably beyond the tip of abdomen in both sexes. Crest of pronotum deeply cleft by all three sulci, the lobes distinctly separated. **discoideus** Serv.
- dd. Hind femora shorter, only reaching the tip of abdomen (female) or but little surpassing it (male). Crest of pronotum less deeply cleft, the lobes closely approximate.
- e. General color grayish-brown. Tegmina with the markings distinct or apical as well as on basal half. Antennae dusky. **angulatus** Stal.
- ee. General color ferruginous testaceous. Tegmina with a large triangular spot on basal half, the apical portion almost without trace of markings. Antennae dusky only at tip. **Schulzi** Bruner.
- cc. Markings of tegmina small, irregularly scattered over the wing save for a row in basal half of discal area.
- d. Pronotum short, the crest low, and but little produced posteriorly. Hind tibiae with nine spines in outer row. **modestus** Giglio-Tos.

- dd. Pronotum longer, considerably produced posteriorly. Hind tibiae with ten spines in outer row. **conspersus** Bruner.  
 bb. Tegmina as well as entire body and legs green, without definite markings. **insignis** Giglio-Tos.  
 AA. Crest of pronotum smooth posteriorly. Genicular angles of hind femora rounded. Green, varied with dark-brown and black. **laevipes** Stal.

*T. discoideus* Serv. This insect has been reported from both Jujuy and Buenos Aires (Giglio-Tos). Unfortunately the writer has never recognized it.

*T. angulatus* Stal. Tucuman (Giglio-Tos).

*T. Schulzi* n. sp. A rather small ferruginous testaceous insect with short, rather robust hind femora, not greatly elongated pronotum, and with a large dusky spot near base of tegmina. It may be recognized further by its rather short, light colored antennae, the apex only being somewhat dusky: also by its moderately smooth pronotal crest, the posterior portion of which barely shows a trace of crenulation. Hind tibiae with 10 spines in outer row.

Length: of body, 28 mm: of pronotum 9.5: of tegmina, 24 mm: of hind femora 17 mm.

Only a single male specimen of this insect from Cordoba has come under my observation. (Collection F. Schulz).

*T. modestus* Giglio-Tos. Reported from Resistencia, Chaco (Giglio-Tos).

*T. conspersus* n. sp.

An insect in which the general color is dull grayish brown, and the markings of tegmina rather small and, save for the row in basal half of discal field, irregularly scattered over the wing. Pronotum rather narrow, the lateral carinae continuous, bluntly tuberculate, especially behind: median carina of moderate height, the posterior portion crenulate. Antennae dusky throughout. Wings with disk red, the costal and axillary fields, along with the hind border dusky. Hind femora short and robust at base, about reaching the extremity of abdomen in both sexes, the carinae provided with

raised blackish tubercles: the outer face and upper edge with indications of dusky bands. Hind tibiae, glaucocinereous, with 10 spines in outer row.

Length: of body, ♂ 30 mm, ♀ 43 mm: of pronotum, ♂ 10-11 mm, ♀ 14-15 mm: of tegmina, ♂ 25-28 mm, ♀ 35 mm: of hind femora, ♂ 17 mm, ♀ 24 mm.

Specimens have been examined from Cordoba (F. Schulz, H. Stempelmann). In stature this insect is very similar to *T. insignis* which follows, and there is a bare possibility that it may prove to be a dusky form of that species.

*T. insignis* Giglio-Tos. Santa Rosa, Salta (Giglio-Tos): Cordoba (F.Schulz).

*T. laevipes* Stal. This seems to be the most abundant species of the genus in the Republic, and is found on the open camp, while all of the other species above referred to frequent localities more or less grown up with woody plants. Specimens were taken at Carcaraña, Santa Fe (O. Thomas).



Fig. 21.—*Tropidonotus laevipes* Stal.

## GENUS ALCAMENES, STAL.

### TABLE FOR SEPARATING THE SPECIES.

- A. Pronotum tectiform; the anterior and middle sulci obsolete above; the posterior lobe longer than anterior. Posterior tibiae with 12-13 spines in outer row. **brevicollis** Stal.
- AA. Pronotum plain above, the median carina moderately elevated: all three of the sulci plain above; the posterior lobe shorter than anterior. Posterior tibiae with 8-10 spines in outer row. **clarazianus** Piet. et Sauss.

*A. brevicollis* Stal. Corrientes, Argentina (Stal).

*A. clarazianus* Piet. et Sauss. La Republique Argentine (Piet. et Sauss.).

## GENUS ELAEOCHLORA, STAL.

## TABLE FOR SEPARATING THE SPECIES.

- A. Fastigium of the vertex large. Costal and anal margins of tegmina yellow, bordered internally narrowly with black.
- b. Tegmina of male but gently narrowing apically where they are broadly rounded. Wings hyaline.
- c. Pronotum obsolete carinated; behind (female) obtuse-angled; male rectangular: tubercles of the sides very small or obsolete. **trilineata** Serv.
- cc. Pronotum very distinctly carinated; behind (female) right-angled or even slightly acute-angled, male frequently acute-angled; lateral tubercles very distinct. **viridicata** Serv.
- bb. Tegmina of male narrowing apically where they are somewhat acute. Wings with the disk rose-color. **picticollis** Gerst.
- AA. Fastigium of the vertex smaller. Costal and anal margins of tegmina concolorous, grass-green. Pronotum short, the hind edge obtuse-angled. **angustipennis** Bruner.

*E. trilineata* Serv. This insect undoubtedly occurs in northern Argentina since it has been reported from both Bolivia and Paraguay.

*E. viridicata* Serv. Buenos Aires, Cordoba, Carcaraña, etc. (all the collections). At Cordoba a well defined variety of this insect seems to prefer for its food-plant a species of *Nicotiana*.

*E. picticollis* Gerst. San Lorenzo, Jujuy (Giglio-Tos).

*Elaeochlora angustipennis* n. sp.

About the size of *E. viridicata* but much more slender and with shorter pronotum. General color light olive green with the lower edges and short oblique lateral band of white on pronotum. Fastigium of vertex rather short, but little narrower than the shortest diameter of eyes, acute angled. The pronotum with the anterior margin slightly angulate, posterior margin obtuse angled. Tegmina and wings rather narrow, surpassing the tip of abdomen. Hind femora slender, the posterior tibiae green, the apical inner portion with tarsi red, spines on the inner edge large and black; outer ones light colored, black tipped.

Length: of body (male), 40 mm: of pronotum 8.5 mm: of tegmina 38 mm: of hind femora 23 mm.

A single male specimen collected at Rosario, Santa Fe, by Anton Kurriger.

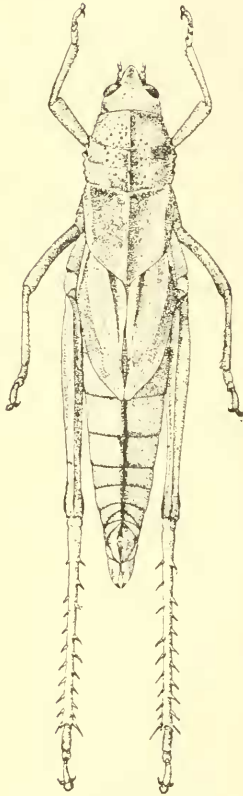


Fig. 22.—*Elaeochlora viridicata* (Serv.)

GENUS RHOMALEA, BURM.

TABLE FOR SEPARATING THE SPECIES.

- A. Wings with basal half or more of anterior and axillary fields black.  
 Pronotum with the lower margins incompletely yellow or red bordered.
- b. Posterior tibiae bifasciate.
- c. The colored bands on the hind border of pronotum continuous.
- cc. The colored bands on hind border of pronotum interrupted so as to form four spots, two dorsal and two lateral.
- bb. Posterior tibiae obsolete fasciate.
- AA. Wings with basal half of anterior and axillary fields colored. Posterior tibiae unifasciate.

**miles** Drury.

**Stolli** Piet. et Sauss.

**nuptialis** Gerst.

**icterus** Piet. et Sauss.

*R. miles* Drury, var. *a*. Republique Argentine (Pict. et Sauss.).

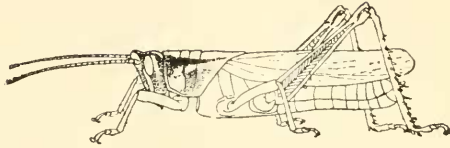


Fig. 23.—*Elaeochlora viridicata* (Serv.)—male.

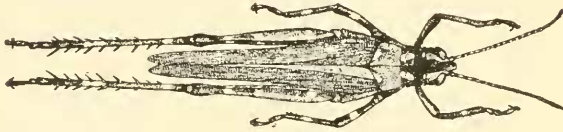


Fig. 24.—*Rhomalea Stollii* Burm.—female.

*R. Stollii* Burm. Salta, Jujuy, Resistencia, Chaco, and Buenos Aires (Giglio-Tos); Rosario (H. Stempelmann); Cordoba (F. Schulz).

This highly colored insect is very common wherever it occurs, and exhibits a tendency to congregate upon certain plants in such numbers as to completely cover them. The black saltonas with their bright markings of rose color and white render them very conspicuous objects. Notwithstanding this they seem to be let alone by most insectivorous birds.

*R. nuptialis* Gerst. San Lorenzo, Jujuy (Giglio-Tos).

*R. icterus* Pict. et Sauss. Republique Argentine (Pict. et Sauss.).



Fig. 25.—*Rhomalea Stollii* nymph.

## GENUS ZONIOPODA, STAL.

### TABLE FOR SEPARATING THE SPECIES.

- A. Body greenish olivaceous; the tegmina of same color, uniform; the wings basally and on disk light blue.
- b. The femora and tibiae all banded with black. **tarsata** Serv.
- bb. Femora and tibiae not banded, the latter all red. **juncorum** Berg.
- AA. Body varied with black. Pronotum vittate. Tegmina with interspaces between principal longitudinal veins fuscous. **omnicolor** Blanch.



*Z. tarsata* Serv. This insect is very common throughout central and northern Argentina where it occurs for the most part on low ground or in the vicinity of water where vegetation is rank. It has sometimes been reported in sufficient numbers to cause noticeable injury to vegetation. (All of the collections).

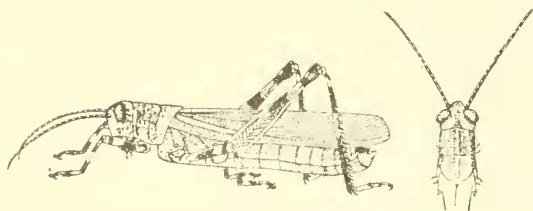


Fig. 26.—*Zoniopoda tarsata* Serv.—male



Fig. 27.—*Zoniopoda omnicolor* Serv.—female

*Z. juncorum* Berg. This insect has been reported only from swampy localities where it occurs sparingly upon rushes growing in the water. Specimens have been recorded from San Lorenzo, Jujuy, and Resistencia, Chaco (Giglio-Tos); Buenos Aires (Dr. Berg).

*Z. omnicolor* Blanch. Found moderately abundant at Cordoba. This insect was described and figured by Blanchard in *Voyage dans l'Amer. merid.*, Vol. VI, pt. 2, Ins. p. (216) Pl. XXVII, fig. 3, and appears to be the same one described by Stal (*Recens. Orth.*, I, 1873, p. 52) as *Z. emarginata*.

*Note.* Bolivar described an insect under the name of *Zoniopoda picta* (*Viaje al Pacif.*, *Orth.*, 1884, p. 37) that later seems to have been placed in the genus *Diponthus* and given the specific name *puelchus* (Pictet et Saussure, *Cat. d'Acrid.*, in *Bull. Soc. ent. Suisse*, VII, p. 375).

## GENUS CLARAZELLA, PICT. ET SAUSS.

*C. patagona* Pict. et Sauss. This insect has been reported from Bahia Blanca, near the boundary of Patagonia (Pictet et Saussure).

## GENUS TROPIDACRIS, SCUDD.

*T. cristata* (Linn.) The "Langosta Negra" of Argentina occurs throughout the various provinces bordering the Andes mountains, where it sometimes joins the mangas of *Schistocerca paranaensis* as these drift over the country. This insect does not, however, become sufficiently numerous to commit depredations in cultivated fields. It has been reported from San Louis, Rioja, Cordoba, Catamarca, Tucuman, Salta and Jujuy.

## GENUS DIPONTHUS, STAL.

## TABLE FOR SEPARATING THE SPECIES.

- A. Tubercle of the prosternum with the apex acuminate, retro-arcuate.
- b. Grass-green. The tegmina immaculate; wings greenish-hyaline. Pronotum with the posterior lobe one-half longer than the anterior. Posterior tibiae green, not dotted with black.
- electus** Serv.
- bb. Black besprinkled with yellow. Tegmina fuscous varied with yellow; wings dilute rose color. Pronotum with the posterior lobe not one-half longer than anterior. Posterior tibiae dotted with black, the base and apex also black.
- clarazianus** Pict. et Sauss.
- AA. Tubercle of prosternum straight, not retro-arcuate.
- b. Tegmina olivaceous or black and yellow, very densely punctate.
- c. Body and legs not black spotted.
- d. Apex of wings clouded, the veins fuscous. Base of ventral segments black.
- e. Larger. Posterior lobe of pronotum entirely greenish testaceous.
- argentinus** Pict. et Sauss.
- ee. Smaller. Posterior lobe of pronotum black except hind border. Knees of hind legs, head and pronotum varied with red.
- Schulzi** Bruner.
- dd. Apex of wings hyaline, the veins greenish. Base of ventral segments not black.
- permistus** Serv.
- cc. Body and legs decidedly spotted with black.
- d. General color greenish, varied with yellow and black.
- communis** Bruner.
- dd. General color dull grayish-brown or dark olive, varied with red and black.
- pynostictus** Pict. et Sauss.
- bb. Tegmina fuscous and yellow-marbled.
- c. Larger. Pronotum with posterior lobe one-half longer than the anterior, rounded behind. Body and legs spotted with black.
- nigro-conspersus** Stal.

cc. Smaller. Pronotum with posterior lobe less than half as long again as the anterior, obtuse-angled. Head, pronotum, abdomen below, and apex of hind femora with base of tibiae marked with red. **puelchus** Pict. et Sauss.

*D. electus* Serv. Patagonia (Pict. et Sauss.).

*D. clarazianus* Pict. et Sauss. Bahia Blanca, Entre Rios (Pict. et Sauss.)

*D. argentinus* Pict. et Sauss. Buenos Aires (Pict. et Sauss.): Carcaraña (O. Thomas).

*Diponthus Schulzi* n. sp.

A very beautiful insect belonging to the same group with the preceding but considerably smaller and more varied with light and dark markings. The frontal costa, median line on fastigium and occiput continuous with the line on pronotum. The cheeks, back and below the eyes, an oblique line on the sides of pronotum commencing at about the middle and directed upwards and backwards, also lower edge of each side bright greenish yellow. There is also a similarly colored line on both the meso- and metapleurae, other portions of the head, pronotum, and meso- and metathorax black. Tibiae black in some specimens: the lower part of face, edges of occiput and ends of hind femora, with back edge of pronotum bright red. Antennae black, basally the joints annulated with light yellowish. Hind femora with a basal spot outside and inside, and two very heavy black bands on outer, upper, and inner faces: sometimes continued more or less strongly on the lower edge also: knees also black both internally and externally; posterior tibiae with the tips and under side of base black; anterior and middle femora, along with tibiae, more or less black. Abdomen yellow with rather heavily marked basal bands of black: above varied with black and yellow streaks.

Length: of body, ♂ 25-26 mm. ♀ 30 mm: of pronotum, ♂ 4.25 mm, ♀ 6 mm; of tegmina, ♂ 20 mm, ♀ 28 mm: hind femora, ♂ 12 mm, ♀ 16 mm.

This beautiful species was contained in the collections of F. Schulz and H. Stempelmann.

It occurs, so far as I am at present aware, only in the vicinity of Cordoba, where it is fairly abundant.

*D. permistus* Serv. Bahia Blanca, Buenos Aires (Pict. et Sauss.); Carcaraña (Bruner, O. Thomas).

*Diponthus communis* n. sp.

Very similar in size and form to *D. pycnostictus* and *D. argentinus*, but differing from those two insects in being of a bright olive green color instead of testaceous or red: and with the prothorax, sides of body, and hind tibiae together with femora, less mottled with black than in those species. Tegmina with the general color varying from dark olive green to black, mottled by lighter markings. Antennae either unicolorous or light with the apex of joints dark, giving these appendages an annulated appearance. Wings with the base and disk red, the apex greenish, in some specimens infuscated, the veins darker. Anterior and middle femora more or less speckled with black: the tibiae in some specimens black, in others greenish: posterior femora with two more or less complete dusky bands on outer, upper, and inner faces: the knees both inside and out black: extremity of posterior tibiae black: spines black tipped. Abdominal segments with indications on venter of transverse black bands on basal portion, other parts of venter more or less closely speckled with black.

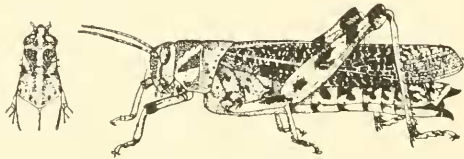


Fig. 28.—*Diponthus communis* Bruner.

Length: of body, ♂ 18 mm, ♀ 36 mm; of pronotum, ♂ 5 mm, ♀ 7.5 mm; of tegmina, ♂ 22 mm, ♀ 30 mm; of hind femora, ♂ 12 mm, ♀ 17 mm.

On camp in provinces of Cardoba, Santa Fe, and Buenos Ayres. (Collection of O. Thomas).

This, next to the preceding, appears to be the commonest species of *Diponthus* upon the pampas. It seems to be partial to a small, thorny *Solanum* as a food-plant.

*D. pygmaeostictus* Pict. et Sauss. Entre Rios (Pict. et Sauss.); Province of Sanat Fe (Bruner).

*D. nigro-conspersus* Stal. La Republique Argentine (Pict. et Sauss.)

*D. puelchus* Pict. et Sauss. Cordoba (F. Schulz, H. Stempelmann.) This insect seems to be the same as that described by Ignacio Bolivar as *Zoniopoda picta* (Artrop. del Viaje al Pacifico, p. 37, 1884). Should this prove true Bolivar's name would have priority.

#### GENUS LEPTYSMSA, STAL.

*L. filiformis* (Serv.) This insect occurs at San Lorenzo, Jujuy, and Resistencia, Chaco (Giglio-Tos).

#### GENUS LEPTYSMINA, GIGLIO-TOS.

##### TABLE FOR SEPARATING THE SPECIES

- A. Tubercle of the prosternum compressed from the sides, the apex dilated and rounded. **pallida** Giglio-Tos.  
 AA. Tubercle of the prosternum with the apex not dilated. **rosea** Giglio-Tos.

*L. pallida* Giglio-Tos. Resistencia, Chaco (Giglio-Tos).

*L. rosea* Giglio-Tos. Buenos Aires (Giglio-Tos); Carcaraña, and Rosario, Prov. Santa Fe (O. Thomas).

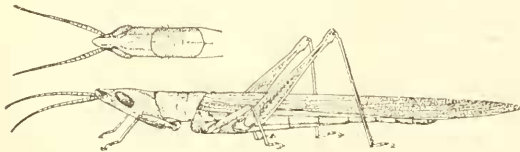


Fig. 29. — *Leptysmina rosea* Giglio-Tos.

#### GENUS ARNILIA, STAL.

##### TABLE FOR SEPARATING THE SPECIES.

- A. Larger. The front more or less rugose. **cylindroides** Stal.  
 AA. Smaller. The front smooth. **gracilis** Giglio-Tos.

*A. cylindroides* Stal. Resistencia, Chaco (Giglio-Tos).

*A. Gracilis* Giglio-Tos.

#### GENUS STENOPOLA, STAL.

*St. puncticeps* Stal. San Lorenzo, Jujuy (Giglio-Tos); Resistencia, Chaco, (Bruner).

#### GENUS PARACORNOPS, GIGLIO-TOS.

*P. longipennis* (DeGeer). Among water plants, Resistencia, Chaco; also Territory of Formosa across the river from Asuncion, Paraguay (Bruner).

#### GENUS BUCEPHALACRIS, GIGLIO-TOS.

*B. Borellii* Giglio-Tos. Formosa, just across the river from Asuncion (Bruner).

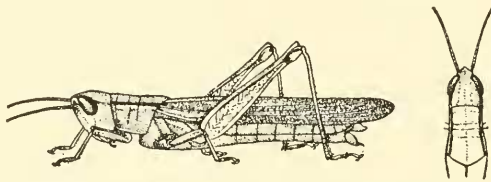


Fig. 30.—*Aleuas lineatus* Stal.—female.

#### GENUS ALEUAS, STAL.

*A. lineatus* Stal. Quite abundant among *Juncus*, Carcaraña, Rosario, etc., Province Santa Fe. (O. Thomas, H. Stempelmann).

#### GENUS JODACRIS, GIGLIO-TOS.

##### TABLE FOR SEPARATING THE SPECIES.

- A. Body cylindrical, sides of pronotum provided with a well-defined dusky band. Sexes equal in size. Cerci of male very long, slender, and with the outer branch more or less curved. Hind tibiae with seven spines in outer row **ferruginea** Giglio-Tos.
- AA. Body more or less compressed, sides of pronotum with but poorly-defined dusky bands. Sexes very unequal in size. Cerci of male not unusually long, straight, the branches nearly equal in length. Hind tibiae with eight spines in outer row.
- b. Wings with base bottle-green. **nebulosa** Bruner.
- bb. Wings caerulean. **caeruleipennis** Bruner.

*J. ferruginosa* Giglio-Tos. Found on rotten logs near Ft. Pilcomayo, across from Asuncion, also at San Bernardino, Paraguay in similar localities (Bruner).

Although by the use of the table for separating the genera of the sub-family Acridiinae found in Argentina the two following species will fall in the genus *Jodacris*, they differ considerably from the insect upon which the table was chiefly based; and, perhaps, form a new genus which would be separated from the preceding in having the body somewhat slenderer, the pronotum more expanded posteriorly, the head proportionately smaller, 8 instead of 7 spines in outer row of hind tibiae, and the abdomen compressed rather than cylindrical as indicated for the genus in which they are placed. In looking over the description of the genus *Jodacris* as given by Giglio-Tos, it appears evident that he had before him a male of the insect mentioned as *J. ferruginea*, and a female of the one named here *J. (?) nebulosa*, hence the agreement of the generic description of *Jodacris* with the present insects.

*Jodacris (?) nebulosa* n. sp.

General color dull ferrugineo-fuscous, with the face, lower and upper edges of sides of pronotum, together with an oblique line on meso- and metapleurae somewhat lighter; tegmina obscurely mottled with dark brown or dull black. The hind femora marked with two dusky bands across the upper edge and extending to the inner face; the lower external edge also black. Posterior wings clouded apically, bright bottle green basally. Sides of pronotum a little above the middle with a more or less well marked oblique dusky band which is continuous with that back of the eyes and below the light colored oblique band of meso- and metapleurae. Posterior tibiae obscure grayish blue, more or less mottled with black, paler basally. Pronotum expanding posteriorly, the three transverse sulci profound; median carina present on front edge of anterior and on posterior lobes; the anterior edge gently emarginate, and posterior edge broadly angulate. Upper valves of female ovipositor moderately long, acuminate, the edges crenulate before the apex. Circi of male compressed, rather broad basally, beyond slender, quite long, gently curved inward, the apex forked, the inner prong slightly the

longer. Supra-anal plate elongate triangular, the apex slightly upturned: last ventral segment sharply acuminate.

Length: of body, ♂ 14 mm, ♀ 20 mm: of pronotum, ♂ 3.25 mm, ♀ 4.5 mm: of tegmina, ♂ 15 mm, ♀ 19 mm: of hind femora, ♂ 9 mm, ♀ 12 mm.

Specimens of this insect were taken both at Asuncion, Paraguay and in the province of Tucuman, Argentina, where it was not uncommon in the open woods upon low bushes and among the leaves beneath the larger trees.

*Jodacris* (?) *caeruleipennis* n. sp.

Very similar in general appearance to *J. nebulosa* but differing from it in being somewhat slenderer and in having the base of wings blue instead of bottle green, the sides of pronotum unicolorous instead of banded, and the male cerci shorter, more robust, and the outer tooth the larger. The tegmina are also less plainly mottled than in the preceding species, while the hind femora are without the black lower edge and have but faint indications of dusky bands above. Posterior tibiae greenish gray, but little infuscated apically.

Size about the same as the preceding only somewhat more slender.

This insect was taken in company with the preceding at Asuncion, Paraguay, and across the river in the territory of Formosa.

GENUS VILERNA, STAL.

\* *V. rugulosa* Stal. This insect seems to be widely distributed over all northern Argentina where it occurs abundantly among the different kinds of yuccas and their allies. A favorite retreat of its seems to be between the bases of these spined leaves and the stem to which they are attached. (Giglio-Tos, Bruner).

GENUS OSMILIOLA, GIGLIO-TOS.

*O. aurita* Giglio-Tos. San Lorenzo, Jujuy (Giglio-Tos).



## GENUS SCHISTOCERCA, STAL.

## TABLE FOR SEPARATING THE SPECIES.

- A. Antennae of male nearly or quite one-half longer than head and pronotum together. The latter angulate behind. Lower edge of sides of pronotum and costal edge of tegmina light yellow-testaceous. **flavofasciata** DeGeer.
- AA. Antennae of male about one-fourth longer than the head and pronotum together. The latter more or less distinctly rounded behind.
- b. Anterior lobe of pronotum narrower than the head exclusive of the eyes, the posterior lobe abruptly expanded. **paranensis** Burm.
- bb. Anterior lobe of pronotum not narrower than the head exclusive of the eyes, the posterior lobe gradually and regularly expanding behind.
- c. Markings on apical half of tegmina composed of longitudinal streaks by the more or less interrupted infuscation of the longitudinal veins. **pallens** Thunb.
- cc. Markings on apical half of tegmina composed of fuscous spots arranged in obliquely transverse series. **cancellata** Serv.

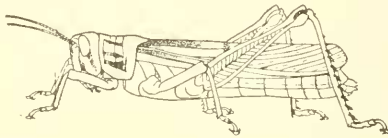


Fig. 31.—*Schistocerca paranensis*—a dwarfed female specimen.

*S. flavofasciata* DeGeer. Throughout the valley of the Rio Parana, but nowhere numerous.

*S. paranensis* Burm. The destructive locust of the country, and represented in all the collections.

*S. pallens* Thunb. Several specimens of this more northern locust were observed along the upper Parana between Corrientes and Formosa.

*S. cancellata* Serv. Buenos Aires, Rosario, Santa Fe, Carcaraña, etc. Quite a number of specimens of this species were examined during the writer's sojourn in the country. As will be seen by an examination of the accompanying illustrations, there is quite a resemblance in the general appearance of this and the *paranensis* imagos; but the saltomas are quite different. The *cancellata* sometimes accompanies the

*paramensis* in its flights. It is more at home on the west coast than east of the Andes.

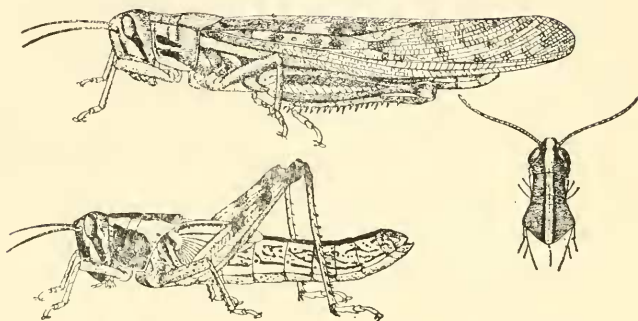


Fig. 32.—*Schistocerca paranensis* Burm

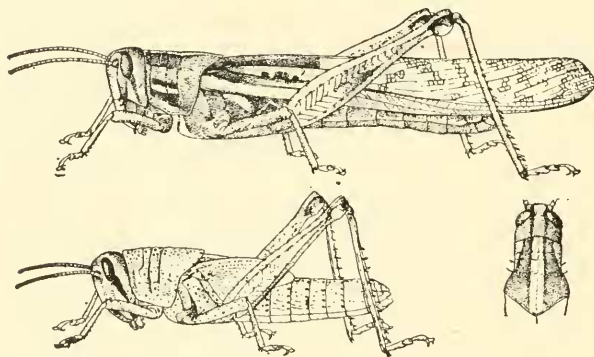


Fig. 33.—*Schistocerca cancellata* Serv.

#### GENUS ATRACHELACRIS, GIGLIO-TOS.

*A. unicolor* Giglio-Tos. A very common insect on the open camp from Buenos Aires northward to Paraguay where it has been known to increase to such an extent as to become a pest. Specimens were contained in all the collections examined. Cordoba (F. Schulz, H. Stempelmann): Carcaraña (O. Thomas).

The accompanying illustration will give the reader an idea of its general appearance. As its name implies it is of a uniform grass-green color.



Fig. 34.—*Atrachelaeris unicolor* Giglio-Tos.—female.

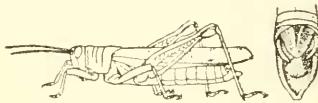


Fig. 35.—*A. unicolor*, male, and tip of abdomen.

#### GENUS DICHROPLUS, STAL.

The insects which comprise this extensive genus are very closely related to one another in their general appearance, and the few forms that have thus far been noted by entomologists have been so briefly described that it is a little doubtful as to their identity. This is especially true when the student is limited in the material that is accessible for study. However this may be, the writer, after considerable study, has separated them into 16 species for Argentina. Several of these occur in large numbers upon portions of the pampa region, and sometimes cause much injury to the grasses. They go by the general name of "tucuras," which word I presume simply means "grasshoppers."

#### TABLE FOR SEPARATING THE SPECIES.

- A. Female with the valves of the ovipositor emarginately truncate. Interval between the mesosternal lobes considerably longer than wide. Male eerei moderately long, compressed back of middle, beyond gently bowed.
  - b. Prosternal tubercle large, transverse. Lower edge and inner face of hind femora blood-red. General color dull brown.
    - obscurus** Bruner.
  - bb. Prosternal tubercle not large, conical. Lower edge and inner face of hind femora yellowish.
  - c. Smaller. General color olivaceous-yellow. Upper valves of ovipositor much longer than the lower ones.
    - clivens** Stal.
  - cc. Larger. General color brownish-yellow. Upper valves of ovipositor or but little longer than lower ones.
    - lemniscatus** Stal.

- AA Female with the valves of the ovipositor entire at apex, acuminate or subacuminate. Interval between the mesosternal lobes usually, but not always, as broad or a little broader than long.
- b. Hind tibiae with nine spines in outer row. Tegmina and wings usually reaching or surpassing the tip of abdomen.
- c. Interval between the mesosternal lobes a little longer than wide. Upper edge of sides of pronotum generally dusky throughout, but sometimes only to the posterior sulcus.
- d. Tegmina not surpassing the tip of hind femora.
- e. Frontal costa sulcate.
- f. Posterior coxae marked externally with a dark line.
- g. Disk of tegmina dark veined. **fuscus** Thunb.
- gg. Disk of tegmina not dark veined. Lower sulcus and inner face of hind femora red. **cinereus** Bruner.
- ff. Posterior coxae not marked externally with a dark line. Tegmina sordid yellow, unicolorous. **bicolor** Giglio-Tos.
- ee. Frontal costa not sulcate. Dorsal edge of tegmina pale-veined. **patruelis** Stal.
- dd. Tegmina surpassing the tip of hind femora.
- e. Male cerci rather heavy and straight. Lower sulcus of hind femora yellowish. **pratensis** Bruner.
- ee. Male cerci slender, incurved beyond the middle. Lower sulcus of hind femora orange-red.
- f. Smaller, very slender; the sides of pronotum parallel. Dusky band on side of pronotum extending to metapleura. **exilis** Giglio-Tos.
- ff. Larger, less graceful; the sides of pronotum diverging posteriorly. Dusky band on side of pronotum continued upon tegmina to the apex. **elongatus** Giglio-Tos.
- cc. Interval between mesosternal lobes fully as wide or wider than long. The dusky band on sides of pronotum more or less interrupted.
- d. Posterior lobe of pronotum somewhat ascending posteriorly, a little longer than the anterior lobe. **arrogans** Stal.
- dd. Posterior lobe of pronotum not ascending posteriorly, about equaling or a trifle shorter than the anterior lobe.
- e. Posterior coxae fuscous or black spotted. Last ventral segment of male abdomen with the lateral margins black.
- f. Smaller. Hind tibiae red. **punctulatus** Thunb.
- ff. Larger. Hind tibiae greenish-testaceous. **conspersus** Bruner.
- ee. Posterior coxae unspotted. Last ventral segment of male abdomen with the margins never black.
- f. Dull olivaceous-yellow. Tegmina about reaching tip of hind femora, unicolorous; the latter with inner face and lower sulcus bright carmine, hind tibiae olivaceous. **Bergii** Stal.
- ff. Yellowish varied above with brown. Tegmina about one-half as long as abdomen, brown, with a discal row of black dots and latero-dorsal yellow lines continuous with those on margins of disk of pronotum. Posterior femora internally on basal half carmine, lower sulcus yellow; hind tibiae glaucous-green. **vittatus** Bruner.
- bb. Hind tibiae with eight spines in outer row. Tegmina and wings abbreviated, about as long as the head and pronotum combined. Olivaceous-green. Posterior tibiae glaucous. **amicus** Stal.

*Dichroplus obscurus* n. sp.

A moderately large and robust species, with the valves of the ovipositor of female emarginately truncate at apex and the interspace between the mesosternal lobes longer than wide. Lower sulcus of hind femora bright blood-red; hind tibiae purplish, somewhat infuscated near the base.

General color dull brown; tegmina mottled with rather large black dots throughout discal field; venter yellow. Frontal costa wide with the margins blunt, sulcate in vicinity of ocellus; pronotum with the median carina heavy, conspicuous throughout; sides but gently divergent posteriorly, the last transverse sulcus about the middle. Tegmina rather narrow, reaching a trifle beyond the tip of hind femora but not quite to tip of abdomen. Posterior femora heavy at base, not reaching apex of abdomen. Prosternal spine robust, long, and directed posteriorly so as to touch the front edge of mesosternum beyond the point of which it extends a trifle.

Length: of body, female, 33 mm. of pronotum 7 mm., of tegmina 22 mm., of hind femora 18 mm.

A single specimen collected during the month of January on the open camp near Carcaraña (A. Kurriger).

*D. eliens* Stal. This insect has not been recognized among the various formes studied, but is included here because of its recorded Uruguayan habitat. Monte Video, Uruguay (Stal).

*D. lemniscatus* Stal. Not recognized by the writer, but reported as coming from Buenos Aires (Stal).

*D. patruelis* Stal. Buenos Aires (Stal); Resistencia, Chaco (Giglio-Tos).

*D. bicolor* Giglio-Tos. San Lorenza, Jujuy (Giglio-Tos).

*D. fuscus* Thunb. Specimens from the Province of Santa Fe are referred to this species (O. Thomas).

*Dichroplus cinereus* n. sp.

General color dull cinereous varied with brown and testaceous. Head in female rather large, in male small; eyes quite large and protruding; fastigium of the vertex of male narrower than the diameter of second joint of antenna, in

the female about half again as broad: frontal costa of equal width throughout, sulcate in male from fastigium to clypeus, in female from ocellus downward. Pronotum, (male) with the sides nearly parallel, (female) somewhat expanding posteriorly, with a rather well defined broad brown band running from back edge of eyes along upper lateral edges of pronotum to base of tegmina, below this the sides are yellowish white. The transverse sulci quite plain, the posterior one a little back of middle: hind edge angulate. Tegmina and wings not quite reaching tip of abdomen in both sexes. General color of former light gray with infuscation at base. Tegmina rather narrow toward the apex. Posterior femora with indication of two oblique dusky bands on outer face and upper edge, inner side, and also lower sulcus more or less tinged with bright orange red: knees inside and out dusky, with the lower edges blue: posterior tibiae with exception of a rather broad pale annulus near base blue: base of wings yellowish, the apex dusky, the upper face black or dark brown.

Length: of body, ♂ 17 mm, ♀ 26 mm; of pronotum, ♂ 3.5 mm, ♀ 5.75 mm; of tegmina, ♂ 10.5 mm, ♀ 16 mm; of hind femora, ♂ 10 mm, ♀ 14 mm.

This insect occurs on the slopes west of the city of Mendoza, where it was found in small numbers upon a leafless, rather tall composite growing in the dry sandy bed of a creek.

*Dichroplus pratensis* n. sp.

General color flavo-tetaceous varied with brown and black: pronotum with light bands at edges of disk: hind tibiae bluish-gray: lower sulcus and inner face of posterior femora varying from yellow to dull orange. Interval between mesosternal lobes a little longer than wide. Tegmina a trifle surpassing tip of hind femora. Pronotum with sides gently diverging posteriorly: the median carina of equal prominence throughout, cut near the middle by last transverse sulcus. The sides of head, back of eyes and pronotum to the last transverse incision dusky, in some specimens back of this con-

tinued as a ferruginous patch to hind edge of pronotum. Tegmina with the dorsal edges light veined, a few dusky spots above: the disk more or less mottled with black, as is also the costal field, though to a much less degree. Posterior femora very heavy, with a basal, middle, and preapical dusky patch above: knees black both inside and outside. Cerci of male rather heavy, straight, and somewhat spatulate apically. Last ventral segment of male abdomen obtusely conical. Prosternal spine short, conical, obtuse.

Length: of body, ♂ 23-26 mm, ♀ 28 mm: of pronotum, ♂ 5 mm, ♀ 6 mm: of tegmina, ♂ 18 mm, ♀ 18-22 mm: of hind femora, 13 ♂ mm, ♀ 14-16 mm.

This insect is quite robust and reminds one not a little of the common North American *Melanoplus birtittatus* in its general appearance. It occurs quite abundantly on the open camp in the provinces of Santa Fe and Buenos Aires where vegetation is rank. It has been reported as sometimes doing considerable damage to the grasses. (Collections of O. Thomas and A. Kurriger).

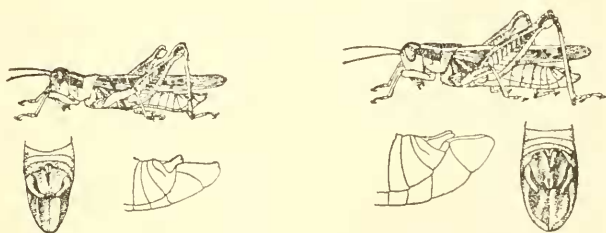


Fig. 36.—*Dichroplus arrogans*, male, and tip of abdomen. Fig. 37.—*Dichroplus pratensis*, male, and tip of abdomen.

*D. exilis* Giglio-Tos. San Lorenzo, Jujuy, Resistencia, Chaco (Giglio-Tos).

*D. elongatus* Giglio-Tos. Province of Tucuman (Giglio-Tos): Cordoba (F. Schulz, H. Stempelmann); Carcaraña, Santa Fe (O. Thomas); Rosario (A. Kurriger). This insect is one of the most abundant and widely dispersed species of the genus in middle Argentina.

*D. arrogans* Stal. Buenos Aires, Monte Video (C. Stal); LaColina, Buenos Aires and Bahia Blanca (Bruner).

This insect was reported as a common destructive species in portions of the provinces of Buenos Aires and Bahia Blanca; and possibly also from Rio Negro and Pampa Central where rather small "tucuras" frequently destroy the "camp."

*D. punctulatus* Thunb. This seems to be the smallest, most variable and at the same time most widely distributed species of the genus. Specimens were examined from all parts of the Republic north of the Rio Negro of Patagonia.

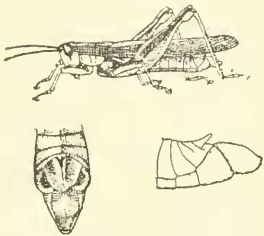


Fig. 38.—*Dichroplus elongatus*, male, and tip of abdomen.



Fig. 39.—*D. punctulatus*, female.

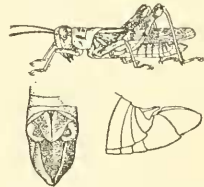


Fig. 40.—*Dichroplus punctulatus*, male, and tip of abdomen.



Fig. 41.—*Dichroplus conspersus*, female.



Fig. 42.—*D. arrogans*, female

*Dichroplus conspersus* n. sp.

A moderately small but very robust species, of a dusky color, in which the hind tibiae are greenish yellow, the lower sulci and inner basal half of posterior femora bright red, and the interspace between the mesoternal lobes a little wider than long.

Head small; pronotum greatly expanding posteriorly, the median carina obliterated on middle lobes, moderately plain on anterior and posterior lobes, severed by all three transverse sulci, the last a little in advance of the middle; the posterior lobe a little the longest, right-angled in male, a



little obtuse in female. Tegmina extending a trifle beyond the tip of hind femora in both sexes: the latter very heavy at base. Prosternal spine short, a little transverse, the apex blunt. Pronotum above with a large triangular black spot immediately back of last transverse sulcus. In some specimens the portion back of this light brown or ferruginous, and in still others dirty white. Occasionally this white band extends also upon the back edge of the lateral sides of pronotum so as to give the insect the appearance of having a light collar or light colored band immediately in front of base of wings. Tegmina irregularly mottled throughout with dusky dots. Hind femora marked above with three dusky bands: the knees also somewhat dusky: several of the abdominal segments with their sides more or less black: last ventral segment of the male with the edges dusky. Cerci moderately slender, elongate, and bowed inward on apical half.

Length: of body, ♂ 16 mm, ♀ 20-23 mm: of pronotum, ♂ 3.75 mm, ♀ 5-5.5 mm: of tegmina, ♂ 13 mm, ♀ 15-17 mm: of hind femora, ♂ 10 mm, ♀ 12 mm.

A common insect on the dryer portions of the camp in southern Santa Fe and eastern Cordoba, where it occurs during the latter part of winter and early spring. (O. Thomas, A. Kurriger).

*D. Bergii* Stal. Resistencia, Chaco (Giglio-Tos); Corrientes, Buenos Aires and Parana (C. Stal); Cordoba (F. Schulz, H. Stempelmann); Carcaraña and Rosario de Santa Fe (O. Thomas, A. Kurriger).

*Dichroplus vittatus* n. sp.

General color bright greenish yellow: the occiput, lateral edges of pronotum in advance of posterior transverse sulcus, along with dorsal edges and discal field of tegmina brown: the three basal segments of abdomen at sides, and knees of hind femora both internally and externally, black: posterior tibiae deep greenish blue: hind femora with the lower sulcus yellow, the inner face near basal half bright

red, this latter color shining through to the outside, beyond which the femora are more or less olivaceous, their upper edges marked with two dusky patches towards the apex. Head moderately prominent, especially in the male; eyes bulging; pronotum but little (male) or considerably (female) expanding posteriorly. Tegmina of male about one-half as long as abdomen, of female a little longer, acuminate; the dorsal angles, together with the dorsal edges of pronotum and a light streak running backward from upper posterior edge of eyes forms a continuous line of light color to tip of tegmina on each side. The metapleurae are furnished with oblique yellow lines extending from back edge of pronotum to base of hind femora. Cerci of male on basal half rather heavy, apical half slender, bowed inward. Space between metasternal lobes as broad as long.

Length: of body, ♂ 15-18 mm, ♀ 25 mm; of pronotum, ♂ 4-4.5 mm, ♀ 6 mm; of tegmina, ♂ 6.5-7 mm, ♀ 11 mm, (sometimes complete, when they are 20 mm); of hind femora, ♂ 8.5-11 mm, ♀ 13-14 mm.

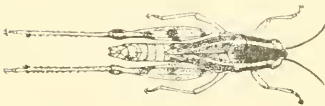


Fig. 43.—*Dichroplus vittatus*, female.

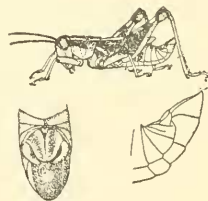


Fig. 44.—*Dichroplus vittatus*, male and tip of abdomen.

This insect occurs in moderate numbers in the provinces of Santa Fe, Cordoba, San Luis, and Mendoza, usually frequenting the edges of groves where it feeds upon the more succulent vegetation. An occasional female specimen is to be found in which the wings are fully developed. (Collections of F. Schulz, H. Stempelmann, and O. Thomas).

*D. amoenus* Stal. Cordoba (F. Schulz).

## GENUS SCOTUSSA, GIGLIO-TOS.

*S. impudica* Giglio-Tos. Resistencia, Chaco (Giglio-Tos): Rosario, Santa Fe (H. Stempelmann): Carcaraña, Santa Fe (O. Thomas).

## GENUS SCOPAS, GIGLIO-TOS.

*S. obesus* Giglio-Tos. Although no definite record exists, so far as the writer knows, of this insect having been collected in Argentina, there is but little doubt that it occurs in the territories of Formosa and Chaco.

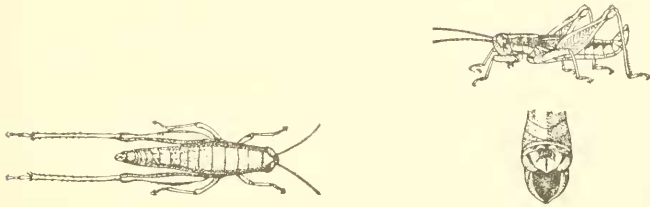


Fig. 45.—*Paradichroplus Brunneri*, Fig. 46.—*P. Brunneri*, male, and female. tip of abdomen.

## GENUS PARADICHIROPLUS, BRUNNER.

## TABLE FOR SEPARATING THE SPECIES.

- A. Hind tibiae provided with nine spines in outer row.
  - b. General color yellowish, the dorsum of pronotum and abdomen dusky. Head black. **bilobus** Giglio-Tos.
  - bb. General color greenish-olivaceous, the dorsum of pronotum and abdomen light. Head concolorous. **Brunneri** Giglio-Tos.
- AA. Hind tibiae provided with eight spines in outer row.
  - b. Moderately robust, the head large. General color ferruginous, irregularly and obsoletely variegated with greenish-fuscosus. **bipunctatus** Giglio-Tos.
  - bb. More slender, fusiform, the head not large. General color brownish-olivaceous. **fusiformis** Giglio-Tos.

*P. bilobus* Giglio-Tos. San Lorenzo, Jujuy (Giglio-Tos).

*P. Brunneri* Giglio-Tos. Cordoba (F. Schulz): Carcaraña (O. Thomas); Resistencia, Chaco (Giglio-Tos).

*P. bipunctatus* Giglio-Tos. San Lorenzo, Jujuy (Giglio-Tos).

*P. fusiformis* Giglio-Tos. San Lorenzo, Jujuy (Giglio-Tos).

## GENUS OSMILIA, STAL.

## TABLE FOR SEPARATING THE SPECIES.

- A. Larger. Base of wings light-bluish. **violacea** Thunb.  
 AA. Smaller. Base of wings sordid yellowish-hyaline. **obliqua** Thunb.

*O. violacea* (Thunb.) San Lorenzo, Jujuy (Giglio-Tos);  
 Chaco, Tucuman (Bruner).

*O. obliqua* Thunb.) San Lorenzo, Jujuy (Giglio-Tos).